Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 771 Area AH (West)

REVISION 1

August 31, 2004

CLASSIFICATION REVIEW NOT REQUIRED PER
EXEMPTION NUMBER CEX-005-02

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 771 Area AH (West)

REVISION 1

August 31, 2004

Prepared by: _____ Date: 9/1/04
Sarah Roberts, Radiological Safety Manager

Reviewed by: _____ Date: 9/1/04
Albert Wolff, B776 Radiological Engineer

Approved by: _____ Date: 9/1/04
Chris Gilbreath, B771 Project Manager

TABLE OF CONTENTS

ABBREVIATIONS/ACRONYMS V

EXECUTIVE SUMMARY VII

1 INTRODUCTION 1

1.1 PURPOSE 1

1.2 SCOPE 1

1.3 DATA QUALITY OBJECTIVES 2

1.3.1 The Problem 2
1.3.2 The Decision 2
1.3.3 Inputs to the Decision 2
1.3.4 Decision Boundaries 2
1.3.5 Decision Rules 2
1.3.5.1 Radionuclides 2
1.3.5.2 Hazardous Waste 3
1.3.5.3 Hazardous Substances 3
1.3.5.4 Beryllium 3
1.3.5.5 PCBs 3
1.3.5.6 Asbestos 3
1.3.6 Tolerable Limits on Decision Error 4
1.3.7 Optimization of Plan Design 4

2 HISTORICAL SITE ASSESSMENT 4

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS 5

4 CHEMICAL CHARACTERIZATION AND HAZARDS 9

4.1 ABESTOS 9
4.2 BERYLLIUM (BE) 9
4.3 RCRA/CERCLA CONSTITUENTS [INCLUDING METALS AND VOLATILE ORGANIC COMPOUNDS (VOCS)] 9
4.4 POLYCHLORINATED BIPHENYLS (PCBS) 9

5 PHYSICAL HAZARDS 10

6 DATA QUALITY ASSESSMENT 10

7 DECOMMISSIONING WASTE TYPES 10

8 FACILITY CLASSIFICATION AND CONCLUSIONS 11

9 REFERENCES 13

ATTACHMENTS

A Survey Unit Overview Map
B Survey Unit 771038 Radiological Data Summary and Survey Map
C Survey Unit 771039 Radiological Data Summary and Survey Map
D Survey Unit 771041 Radiological Data Summary and Survey Map
E Survey Unit 771043 Radiological Data Summary and Survey Map

F Survey Unit 771077 Radiological Data Summary and Survey Map
G Chemical Data Summaries and Sample Maps
H Data Quality Assessment Details
I Historical Review
J Supporting Documentation

ABBREVIATIONS/ACRONYMS

ACM	Asbestos Containing Material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
PDSR	Pre-demolition survey report
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable Surface Activity
RSOP	RFCA Standard Operating Protocol
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity

VOCs	Volatile organic compounds
WSRIC	Waste Stream and Residue Identification and Characterization

EXECUTIVE SUMMARY

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the west side of the Building 771 Second Floor (AH West), for structural surfaces that exist within six feet of the final grade. This report does not address the radiological status of areas that exist greater than six feet below the final grade. However, surveys shall be performed to verify that these areas do not exceed 100 nCi/g (at the surface) and 7 nCi/g (over the volume of concrete), and the results provided in the 771 AH East Pre-Demolition Survey Report.

Because this area will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as part of this PDS include the interior surfaces of Area AH West (within six feet of the final grade).

The PDS encompassed both chemical and radiological characterization. The characterization was built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project.*

Based upon the results of this PDSR, major portions of Area AH West meet the unrestricted release limits specified in the site Pre-Demolition Survey Plan. After multiple hydrolazing passes (with 35,000 to 50,000 psi high pressure water) which removed ¼" to ½" of surface concrete, and extensive dry decontamination efforts, several areas of the structure do not meet unrestricted release limits. The areas of the structure that do not meet unrestricted release limits and exist within six feet of final grade will be covered with fixative and packaged as radiological waste during building demolition.

No removable contamination in excess of the unrestricted release limits (20 dpm/100 cm^2) exists in Area AH (West). No beryllium contamination has been detected above the action level in Area AH (West). In addition, radiological controls shall be in place during demolition to assure there is no release of contamination. These controls shall include the use of water and fixative for dust suppression, air sampling, and continuous RCT coverage. Air sampling shall include localized low-volume air monitors within the demolition zone and lapel air samplers for appropriate operators and support personnel.

The contaminated surfaces (i.e., painted surfaces within 6' of final grade) will be carefully removed during demolition activities. A bright-colored fixative will be used to allow for visible detection of these areas by operators and waste personnel. In the event painted debris becomes mixed with the areas of concrete that have been free-released, these portions will be dispositioned as radiological waste to the extent practicable (i.e., all debris where paint is visible and any areas where contaminated concrete may have mixed with areas of concrete that have been free-released). All attempts will be made to minimize mixing of clean and contaminated concrete during demolition.

The remainder of the structure can be demolished and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. The structural surfaces that exist greater than six feet below final grade that meet the established limits (less than 100

7

nCi/g surface and less than 7 nCi/g over the volume of concrete) will remain in place (this data for the second floor shall be provided in the Area AH (East) PDSR). All metal items (equipment, piping, and rebar) removed during demolition shall be packaged as radiological waste. To ensure that the facility remains free of contamination and PDS data remain valid, Level 1 isolation controls are established.

1 INTRODUCTION

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the west side of Building 771 Second Floor (AH West). Because this Type 3 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). The results of this survey shall demonstrate that the structural concrete to be used for fill material meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan. The results of this survey also demonstrate that major portions of Area AH (West) do not meet unrestricted release limits. These areas shall be segregated and packaged as radiological waste during building demolition. Building surfaces characterized as part of this PDS include the interior surfaces of the west half of the Building 771 second floor (within six feet of the final grade).

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is Area AH West. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 3 facility can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for Area AH West. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0.

1.1 PURPOSE

The purpose of this report is to communicate and document the results of Area AH West. A PDS is performed prior to building demolition to define the pre-demolition radiological and chemical conditions of a facility. The pre-demolition conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 SCOPE

This report presents the pre-demolition radiological and chemical conditions of the Area AH West surfaces that will be free-released and used as backfill per the requirements of the *RFETS, RFCA RSOP for Recycling Concrete*. The results of this report also demonstrate that major portions of Area AH (West) do not meet the unrestricted release limits. These areas shall be segregated and packaged as radiological waste during building demolition.

The characterization data for the Area AH structural surfaces that exist greater than six feet below final grade that were surveyed in accordance with the *Building 771/774 Closure Project Characterization Plan for Areas Greater than Six Feet Below Final Grade*, dated November 24, 2003, will be provided in the Area AH (East) PDSR.

9

1.3 DATA QUALITY OBJECTIVES (FOR FREE-RELEASE)

The Data Quality Objectives (DQOs) used in designing this PDS meet the minimum requirements specified in Section 2.0 of the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

1.3.1 The Problem

The problem involves determining whether or not the survey unit is suitable for unrestricted release in accordance with this plan.

1.3.2 The Decision

The decision is verification that objectives specified in the decommissioning decision document have been met (e.g., certain materials meet unrestricted release criteria for radiological and non-radiological constituents).

1.3.3 Inputs to the Decision

Inputs to the decision include the magnitude and location of data from preceding characterizations, including RLC and In-Process Characterization (IPC), PDS results, decision document action levels, and unrestricted release criteria.

1.3.4 Decision Boundaries

The decision boundaries are the spatial confines of the facility, including rooms and sets of rooms, in two and three dimensions. Interior surfaces are included, including those below grade. Boundaries may be further defined in RFCA decision documents.

1.3.5 Decision Rules

The following are decision rules to be used during PDS:

1.3.5.1 Radionuclides

If all radiological survey and scan measurements (and sample measurements, where sample activity is translated to surface activity as described in Section 7.2.3 of the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP)), are below the surface contamination guidelines specified in the Site PDSP, then the related areas and/or volume are considered not radiologically contaminated. The media sample result is calculated by converting volumetric activity (typically reported in pCi/g) to surface activity (dpm/100 cm^2). The volumetric result (pCi/g) is multiplied by the weight of the sample (grams) and by 2.22 (conversion from pCi to dpm).

If any radiological survey or scan measurement exceeds the surface contamination guidelines provided in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP), the related survey unit must be evaluated per the statistical tests described in section 7.0, Data Analysis and Quality Assessment, of this plan. If any radiological

sample measurement (or disposal unit volume) exceeds 100 nanocuries per gram of transuranic material, the related volume of material is considered transuranic (TRU) waste.

1.3.5.2 Hazardous Waste

If decommissioning waste is mixed with or contains a listed hazardous waste, or if the waste exhibits a characteristic of a hazardous waste, then the waste is considered RCRA-regulated hazardous waste in accordance with 6 CCR 1007-3, Parts 261 and 268.

1.3.5.3 Hazardous Substances

If material contains a listed hazardous substance above a decision document action level (e.g., RFCA) and/or the CERCLA reportable quantity (40 CFR 302.4), the material is subject to CERCLA regulation (i.e., remediation and/or notification requirements).

1.3.5.4 Beryllium

If surface concentrations of beryllium are equal to or greater than 0.2 $\mu g/100\ cm^2$, the material is considered beryllium contaminated per 10 CFR 850.

1.3.5.5 PCBs

If material contains PCBs, in a non-liquid state, from the manufacturing process at concentrations ≥50 ppm, the material is considered PCB Bulk Product Waste and subject to the requirements of 40 CFR 761.

If PCB contamination from a past spill/release is suspected, or if a PCB spill is discovered that has not been cleaned up, the associated material is considered PCB Remediation Waste and subject to the requirements of 40 CFR 761. PCB remediation waste includes: materials disposed of prior to April 18, 1978, that are currently at concentrations ≥50 ppm PCBs, regardless of the concentration of the original spill; materials which are currently at any volume or concentration where the original source was ≥500 ppm PCBs beginning on April 18, 1978, or ≥50 ppm PCBs beginning on July 2, 1979; and materials which are currently at any concentration if the PCBs are spilled or released from a source not authorized for use under 40 CFR 761.

If a waste or item contains PCBs in regulated concentrations, the waste or item is classified as PCB-regulated material and subject to the requirements of 40 CFR 761.

1.3.5.6 Asbestos

If any one sample of a sample set representing a homogeneous medium results in a positive detection (i.e., >1% by volume), then material is considered ACM (40 CFR 763 and 5 CCR 1001-10).

11

1.3.6 Tolerable Limits on Decision Error

Acceptable false negative *(a)* errors for calculating the number of samples generally range from 1% to 10%. The default value specified by the Site PDSP is 5%, which was assumed for the survey design in this report.

1.3.7 Optimization of Plan Design

Statistically based radiological surveying and sampling will be conducted per the guidance in Appendix B of the RFETS Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to Section 4.0 of the PDSP for direction of characterization of non-radiological, chemical constituents. For this report, the minimum number of measurement locations is fifteen per 100 square meters of floor area for Class 1 survey units, and fifteen per 1000 square meters of floor area or total area (whichever is larger) for Class 2 survey units, as calculated based on the guidance in MAN-127-PDSP. The measurement design was based on total surface area for the Room 283 survey units, because the floors/lowers and upper walls/ceilings were divided into 2 survey units (771043 and 771077).

The $DCGL_W$ is 100 dpm/100 cm^2 for TSA and media measurements/samples, and 20 dpm/100 cm^2 for RSA measurements. The LBGR was adjusted to obtain a relative shift of two. The estimated standard deviation for each measurement type was calculated based on an assumed coefficient of variation of 30%.

The scan requirements for specific survey unit classifications are as follows:

Class 1: 100% of accessible surface
Class 2: 10-50% upper walls/ceilings (the only Class 2 survey unit included in the scope of this report is upper walls/ceiling only)

No Class 3 survey units are included in the scope of this report.

2 HISTORICAL SITE ASSESSMENT

A facility-specific Hazards Characterization Report was conducted to understand the facility history and related hazards. The Building 771 Hazards Characterization was performed in June 2001 (Refer *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0). Based on the characterization results, radiological contamination is suspected on the structural surfaces of the 2nd Floor of Building 771 (including Area AH West). Media sample results indicated radiological contamination in excess of the unrestricted release limits in or under the paint in all areas except Room 283 (refer to Attachment J). Therefore, all paint was removed from Area AH (areas within 6' of final grade), with the exception of Room 283.

Interviews with site personnel indicate that the paint in Room 283 was used for aesthetic purposes only (to provide more light in the area for safety considerations).

The area included in the scope of this PDSR is referred to herein Area AH West. This area was part of the original building 771 construction, and included the Room 249 Zone

12

1 Exhaust and Utilities Area, the Room 283 HVAC Exhaust and Utilities Area, and Room 235 HVAC Supply and Utilities Area. All non-load-bearing walls were removed from Area AH West during D&D activities.

Area AH West consists of four Class 1 survey units (771038, 771039, and 771041, and 771077), and one Class 2 survey unit (771043) based the contamination potential, per Section 3.0 of the PDSP.

The hazards characterization results and historical review (refer to Attachment I) were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. Characterization documentation is located in the Building 771 Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Area AH West was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern (weapons-grade plutonium isotopes). Based upon a review of the characterization data, historical and process knowledge, in-process survey data, building walk-downs, and the Site Pre-Demolition Survey Plan (MAN-127-PDSP), a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to survey packages 771038, 771039, 771041, 771043, and 771077). A Survey Unit Overview Map is presented in Attachment A. Based on hazard characterization data and historical and process knowledge, transuranic isotopes are the primary contaminants of concern in Buildings 771/774. Therefore, the PDS was performed to the transuranic PDS unrestricted release criteria. Individual radiological survey unit packages are maintained in the Building 771 Characterization Project files.

The Area AH West survey unit packages were developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure.* Total surface activity (TSA) and removable surface activity (RSA) measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures.* Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis.* Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control.*

For this report, the minimum number of measurement locations is fifteen per 100 square meters of floor area for Class 1 survey units, and fifteen per 1000 square meters of floor area or total area (whichever is larger) for Class 2 survey units, as calculated based on the guidance in MAN-127-PDSP. The measurement design was based on total surface area for the Room 283 survey units, because the floors/lowers and upper walls/ceilings were divided into 2 survey units (771043 and 771077).

Random survey locations that landed on previously identified "hot-spots" (i.e., areas shaded in red on survey unit overview maps) were relocated as close to the original location as possible within the contiguous square-meter. When this was not possible, a new random location was selected from a random-number generator.

The contamination levels for areas beneath fixative (annotated in yellow on survey unit maps) and beneath the spots that do not meet unrestricted release limits (annotated in red on survey unit maps) range from 100 dpm/100 cm^2 to 10,000 dpm/100 cm^2, with average contamination levels less than 1000 dpm/100 cm^2.

Surfaces that exist greater than 6' below final grade were characterized per the requirements of the *Building 771/774 Closure Project Characterization Plan for Areas Greater than Six Feet Below Final Grade*, dated November 24, 2003. The structural surfaces that exist greater than six feet below final grade that meet the established limits (less than 100 nCi/g surface and less than 7 nCi/g over the volume of concrete) will remain in place. Surfaces that did not meet the established surface limits (100 nCi/g) were removed with a scabbling tool or grinder. Areas that did not meet the established volumetric limits (7 nCi/g) were removed with a concrete saw. The data and map for Area AH for surfaces greater than 6' below final grade will be provided in the Area AH (East) PDSR.

Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachments B, C, D, E, and F, *Radiological Data Summary and Survey Maps*.

Area AH West HVAC Supply Area – (Survey Unit 771038)

The north side of Area AH West is classified as a Class 1 survey unit. This area includes Rooms 232 through 238, and housed the HVAC supply fans and plenums. A total of 75 random TSA and RSA measurements were collected. Surface scans of 1640 m^2 (100% of accessible surfaces) were performed. All paint was removed from the structural surfaces; therefore no media samples were collected for this survey unit.

All scans and surveys in survey unit 771038 were less than the applicable PDS transuranic DCGL values, with the exception of the areas marked in red on the survey unit map. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771038 are presented in Attachment B, *Survey Unit 771038 Radiological Data Summary and Survey Map*.

Area AH West (West Side) – (Survey Unit 771039)

The west side of Area AH West is classified as a Class 1 survey unit. This area includes Rooms 239, 240, and 240G. A total of 60 random TSA and RSA measurements were collected. Surface scans of 1257 m^2 (100% of accessible surfaces/areas not covered with fixative) were performed. All paint was removed from the structural surfaces; therefore no media samples were collected for this survey unit. Fixative has been applied to the block wall adjacent to the Main Plenum filter racks, because this entire wall will be packaged as radiological waste during demolition. This is because the block wall is

covered on the north side by the steel liner that was part of the Main Plenum structure, and could not be surveyed for unrestricted release. The wall will be sprayed with fixative when the remaining Main Plenum structure is removed. The wall will then be removed and packaged as radiological waste.

All scans and surveys in survey unit 771039 were less than the applicable PDS transuranic DCGL values, with the exception of the areas marked in red on the survey unit map. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771039 are presented in Attachment C, *Survey Unit 771039 Radiological Data Summary and Survey Map.*

Area AH West Room 249 – (Survey Unit 771041)

The west side of Room 249 in Area AH West is classified as a Class 1 survey unit. This area includes the west half of Room 249, and housed the zone 1 filter plenums, fans, motors and ductwork. A total of 101 random TSA and RSA measurements were collected. Surface scans of 1535 m^2 (100% of accessible surfaces/areas not covered with fixative) were performed. Fixative is applied to floor surfaces above the Area AE ceiling locations that could not be decontaminated to unrestricted release limits (areas south of the G-column. All paint was removed from the structural surfaces; therefore no media samples were collected for this survey unit.

Equipment items that remain in this area include a portion of the FU-1 plenum and the west side of the main plenum structure. All filters have been removed from these plenums and only the structural steel remains. The surveys of the FU-1 plenum indicate contamination up to 450 dpm/100 cm^2 (fixed alpha) and less than 20 dpm/100 cm^2 (removable alpha). Therefore, the FU-1 plenum structure will be packaged as radiological waste during demolition. The surveys of the floor beneath the FU-1 plenum indicate fixed alpha activity up to 152 dpm/100 cm^2 and less than 20 dpm/100 cm^2 (removable alpha). Because this floor is not accessible for survey, it will be packaged as radiological waste during demolition.

Areas of fixed contamination were identified on the main plenum on the steel liner and columns (1000 dpm/100 cm^2 average, 96,000-dpm/100 cm^2 maximum), therefore fixative has been applied to all remaining surfaces. The remaining plenum structure will be packaged as radiological waste during demolition.

All scans and surveys in survey unit 771041 were less than the applicable PDS transuranic DCGL values, with the exception of the areas marked in red on the survey unit map. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771041 are presented in Attachment D, *Survey Unit 771041 Radiological Data Summary and Survey Map.*

Area AH West Room 283 (upper walls/ceiling) – (Survey Unit 771043)

The upper walls/ceiling of the west side of Room 283 is classified as a Class 2 survey unit. This area includes the upper walls and ceiling on the west side of Room 283. Room 283 housed the HVAC exhaust fans and ductwork, along with several offices. This area

15

was physically isolated from the remainder of Building 771 during operations, and was supplied by a separate ventilation source. A total of 19 random TSA and RSA measurements were collected. Surface scans of 208 m^2 (17% of total surface area) were performed. Because most of the upper walls/ceiling in Room 283 are not painted, biased paint samples were collected and no elevated results were detected (refer to Attachment J). Therefore the paint was not removed from this survey unit.

Equipment items that remain in this area include six large building exhaust fans and associated ductwork, electrical panels, conduit, domestic cold water, fire protection, steam and steam condensate. These systems are not suspected to be internally contaminated. The piping systems have been air-gapped and are free of liquids. Surveys of the exterior surfaces did not detect any contamination in excess of the unrestricted release limits. The piping will be removed and packaged as radiological waste during demolition.

All scans and surveys in survey unit 771043 were less than the applicable PDS transuranic DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771043 are presented in Attachment E, *Survey Unit 771043. Radiological Data Summary and Survey Map.*

Area AH West Room 283 (lower walls) – (Survey Unit 771077)

The lower walls of Room 283 are classified as a Class 1 survey unit. This area includes all of the Room 283 lower walls that exist within 6' of final grade. A total of 15 random TSA and RSA measurements were collected. Surface scans of 29 m^2 (100% of accessible surfaces) were performed. Because most of the lower walls in Room 283 exist more than 6' below final grade, biased paint samples were collected and no elevated results were detected (refer to Attachment J). Therefore the paint was not removed from this survey unit.

Equipment items that remain in this area include six large building exhaust fans and associated ductwork, electrical panels, conduit, domestic cold water, fire protection, steam and steam condensate. These systems are not suspected to be internally contaminated. The piping systems have been air-gapped and are free of liquids. Surveys of the exterior surfaces did not detect any contamination in excess of the unrestricted release limits. The piping will be removed and packaged as radiological waste during demolition.

All scans and surveys in survey unit 771077 were less than the applicable PDS transuranic DCGL values, with the exception of the areas marked in red on the survey unit map. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771077 are presented in Attachment F, *Survey Unit 771077 Radiological Data Summary and Survey Map.*

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Based on a thorough review of historical and process knowledge, visual inspections, and personnel interviews, no additional chemical hazard sampling requirements were identified.

4.1 Asbestos

Asbestos containing building material is not present in or on Area AH West (previously removed).

4.2 Beryllium (Be)

Area AH West is not and has never been a beryllium-controlled area. Per the Beryllium Sampling Decision Tree in the PDSP, 28 biased beryllium smear samples were collected in Area AH West (seven per survey unit, with the exception of 771043, which encompasses upper walls/ceiling surfaces only), in accordance with the PDSP and the *Beryllium Characterization Procedure,* PRO-536-BCPR, Revision 0, September 9, 1999.

All beryllium smear sample results were less than the investigative limit of 0.1 $\mu g/100cm^2$. PDS beryllium laboratory sample data and location maps are contained in Attachment G, *Chemical Data Summaries and Sample Maps.*

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Based upon the *B771 and B774 Hazards Characterization Report, 771 Closure Project,* Revision 0, dated June 12, 2001, personnel interviews, facility walk-downs, and historical process knowledge (WSRIC/WEMS), the Area AH West did not contain hazardous waste storage units. A visual inspection of the building by 771/774 Industrial Hygiene personnel verified the absence of hazardous waste residuals and/or stains on the floor/concrete slab, walls, or ceiling. As a result of these observances, it has been determined that no sampling for RCRA/CERCLA constituents is required. The concrete generated from the demolition of the areas included in the scope of this report can be used for onsite recycling in accordance with the Concrete Recycling RSOP.

4.4 Polychlorinated Biphenyls (PCBs)

Based on historical knowledge, personnel interviews, and 771/774 Environmental Compliance Personnel walk-downs, Area AH West never used/transferred free flowing/exposed PCB's. At one time the facility may have used PCB ballasts in its fluorescent light fixtures, however, all of these have been removed, and compliantly disposed of, resulting in no impact on demolition activities in this area.

Per the *B771 and B774 Hazards Characterization Report for the 771 Closure Project,* PCBs are present in some applied paints (i.e., on several walls and floors within the B771 and B774 Contamination Areas). However, any painted debris that is not disposed of as radiological waste will be recycled on-site, therefore does not require additional sampling to quantify levels of PCBs.

5 PHYSICAL HAZARDS

Physical hazards associated with Area AH West are common to standard industrial environments. Several large floor penetrations exist that have been covered with steel plates (following survey) to avoid fall hazards. In addition, auxiliary lighting is required for access to the area. The facility has been relatively well maintained and is in good physical condition, therefore, does not present hazards associated with building deterioration.

Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Area AH West, and consequent waste management, is of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments B, C, D, E, and F) were verified and validated relative to MAN-127-PDSP, Pre-Demolition Survey Plan for D&D Facilities, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- the *number* of samples and surveys;
- the *types* of samples and surveys;
- the sampling/survey process as implemented "in the field"; and
- the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are presented in Attachment H. The DQA Checklists are provided in the individual survey unit packages (located in the Building 771 Characterization Files).

The Minimum Detectable Activity (MDA) for each PDS instrument was determined *a priori* based on typical parameters (background, efficiency, and count time). A list of radiological field instrumentation and associated sensitivities is presented in Table 1.

Table 1
PDS Radiological Field Instrumentation and Minimum Detectable Activities

Model	Measurement Type	MDA (dpm/100 cm^2)
NE Electra DP6	TSA	48
Eberline SAC-4	Removable (Smears)	10
NE Electra AP6	Scans	300

7 DECOMMISSIONING WASTE TYPES

The demolition and disposal of Area AH West will generate a variety of wastes. Structural surfaces exist within 6' of final grade that do not meet unrestricted release

limits shall be packaged as radiological waste. These areas shall be delineated with blue paint and yellow fixative, such that they can be easily identified during demolition for segregation and packaging.

The remaining concrete within 6' of final grade can be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete. The portions of the structure that exist beneath the 6' grade line can remain in place given that they meet the established limits (less than 100 nCi/g at the surface and less than 7 nCi/g over the volume of concrete). Any equipment items removed (piping, plenums, etc.) will be packaged as radiological waste. Any area that does not meet unrestricted release limits shall be covered with fixative to prevent the release of contamination during demolition activities.

The estimated volume of radiological waste to be generated for this area is 1800 cubic yards. This includes any remaining equipment items, concrete that does not meet the unrestricted release limits, and rebar.

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Area AH West is classified as an RFCA Type 3 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Based upon the results of this PDSR, portions of the Area AH West structure meet the unrestricted release limits specified in the site Pre-Demolition Survey Plan and is ready for demolition. Areas that are marked in red in Attachments B, C, D, E, F do not meet unrestricted release limits and will be packaged as radiological waste during demolition. The structural surfaces in Area AH West that exist beneath the 6' grade line are expected to meet the established limits (less than 100 nCi/g at the surface and less than 7 nCi/g over the volume of concrete). These areas can remain in place when all applicable data is provided to the DOE and CDPHE and concurrence is received. The PDS for Area AH West was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria.

A facility walkdown and historical review indicates that no RCRA/CERCLA constituents exist in Area AH West (refer to Attachment I, Historical Review). Any painted debris generated during demolition will be recycled on-site or disposed of as radiological waste.

Radiological contamination in excess of the PDSP Table 7-1 limits was not detected in Area AH West (with the exception of the areas in red on maps in Attachments B, C, D, E, and F). The applicable limits are as follows:

Table 2
PDSP Table 7-1 Surface Contamination Limits

Radionuclides	Total Average (dpm/100 cm^2) (1) ($DCGL_W$)	Total Maximum (dpm/100 cm^2) (2) ($DCGL_{EMC}$)	Removable (dpm/100 cm^2) ($DCGL_W$)
Transuranics	100	300	20

(1) Measurements of average contamination should not be averaged over an area of more than 1 m^2.
(2) The maximum contamination level applies to an area of not more than 100 cm^2.

Based upon this PDSR, portions of Area AH West can be demolished and concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. The areas shaded in red in Attachments B, C, D, E, and F do not meet unrestricted release limits and shall be covered with fixative and packaged as radiological waste during demolition. The portions of the structure that exist beneath the 6' grade line can remain in place provided that they meet the established limits (less than 100 nCi/g at the surface and less than 7 nCi/g over the volume of concrete). The data for the areas that are greater than 6' below final grade shall be presented in the Area AH (East) PDSR. These areas will be covered with fixative to prevent the release of contamination during demolition activities.

No removable contamination in excess of the unrestricted release limits (20 dpm/100 cm^2) exists in Area AH (West). No beryllium contamination has been detected above the action level in Area AH (West). In addition, radiological controls shall be in place during demolition to assure there is no release of contamination. These controls shall include the use of water and fixative for dust suppression, air sampling, and continuous RCT coverage. Air sampling shall include localized low-volume air monitors within the demolition zone and lapel air samplers for appropriate operators and support personnel.

The contaminated surfaces (i.e., painted surfaces within 6' of final grade) will be carefully removed during demolition activities. A bright-colored fixative will be used to allow for visible detection of these areas by operators and waste personnel. In the event painted debris becomes mixed with the areas of concrete that have been free-released, these portions will be dispositioned as radiological waste to the extent practicable practicable (i.e., all debris where paint is visible and any areas where contaminated concrete may have mixed with areas of concrete that have been free-released). All attempts will be made to minimize mixing of clean and contaminated concrete during demolition

To ensure that the facility remains free of contamination and that PDS data remain valid, Level 1 isolation controls have been established.

9 REFERENCES

B771 and B774 Hazards Characterization Report for the 771 Closure Project, dated June 12, 2001, Revision 0.

DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Cleanup Agreement (RFCA)*, July 19, 1996.

DOE Order 5400.5, *Radiation Protection of the Public and the Environment*

DOE Order 414.1A, *Quality Assurance*

EPA, 1994. *The Data Quality Objective Process,* EPA QA/G-4.

K-H, 1999. *Decommissioning Program Plan*, June 21, 1999.

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual* (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure,* Rev. 1, May 22, 2001.

PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 2, March 10, 2003.

PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.

PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-563-ACPR, *Asbestos Characterization Procedure,* Revision 0, August 24, 1999.

PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0, August 24, 1999.

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.

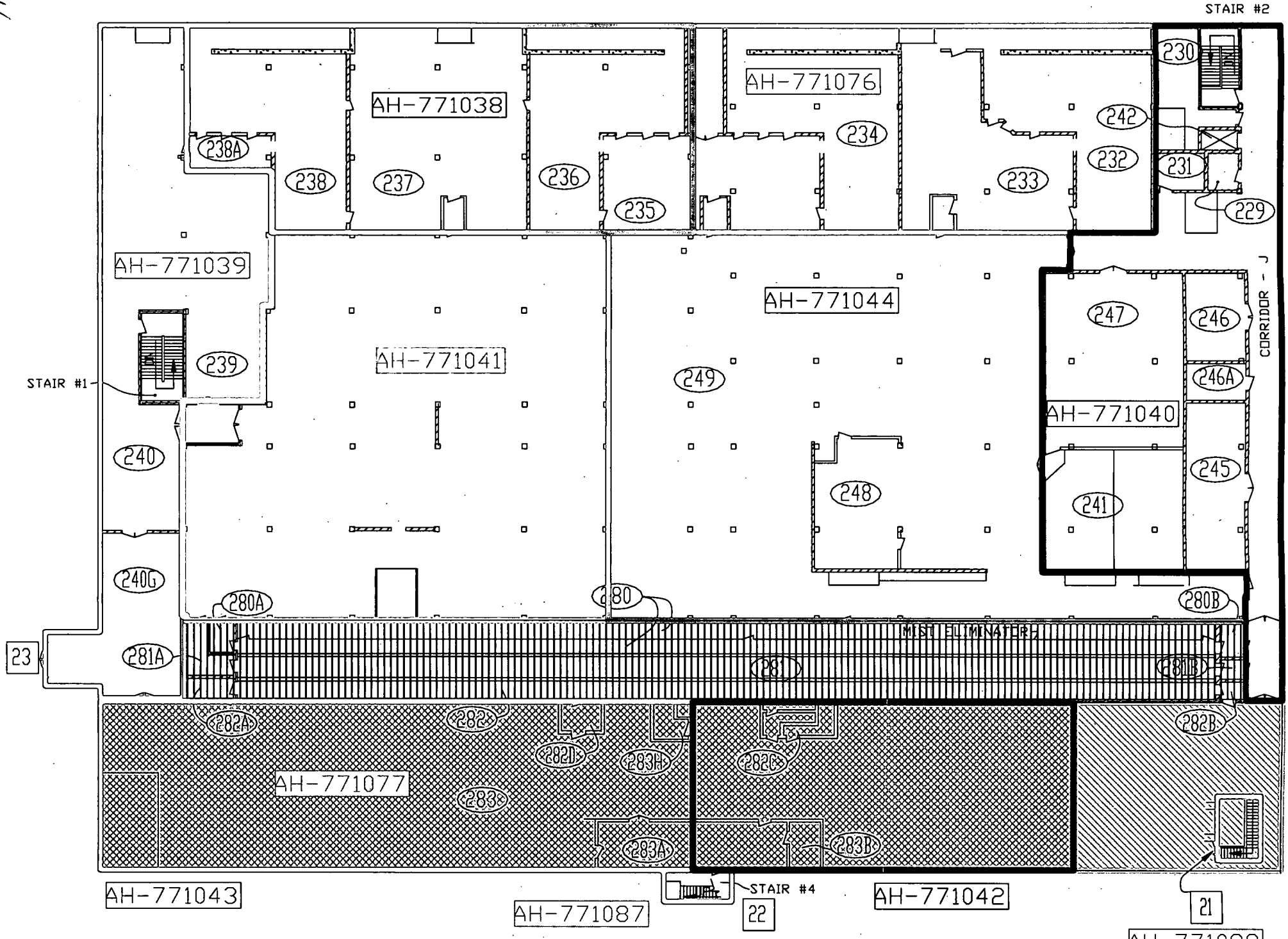
RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

RFETS, RFCA RSOP for Recycling Concrete, September 28, 1999

ATTACHMENT A

Survey Unit Overview Map

2nd Floor West Side



BLDG 771 SECOND FLOOR ROOMS

ATTACHMENT B

Survey Unit 771038
Radiological Data Summary and Survey Map

Survey Area: AH	Survey Unit: 771038	Building: 771

Description: Bldg 771 Second Floor North Section (West)

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 75 | Nbr Biased Measurements Required: 0 | Nbr QC Required: 4

Nbr Random Measurements Performed: 75 | Nbr Biased Measurements Performed: 0 | Nbr QC Performed: 4

Alpha

Maximum:	84.3 dpm/100cm²
Minimum:	-2.0 dpm/100cm²
Mean:	33.5 dpm/100cm²
Standard Deviation:	22.3
QC Maximum:	59.5 dpm/100cm²
QC Minimum:	10.9 dpm/100cm²
QC Mean:	38.6 dpm/100cm²
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 75 | Nbr Biased Measurements Required: 0

Nbr Random Measurements Performed: 75 | Nbr Biased Measurements Performed: 0

Alpha

Maximum:	6.0 dpm/100cm²
Minimum:	-1.5 dpm/100cm²
Mean:	0.0 dpm/100cm²
Standard Deviation:	1.3
Transuranic DCGLw:	20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0 | Nbr Biased Required: 0

Nbr Random Collected: 0 | Nbr Biased Collected: 0

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000 dpm/100cm²
Uranium DCGLemc:	15,000 dpm/100cm²

Transuranic

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Transuranic DCGLw:	100 dpm/100cm²
Transuranic DCGLemc:	300 dpm/100cm²

Conclusion - A comparison of the random, biased and QC measurement results against the PDSP Table 7-1 Surface Contamination Guideline limits was conducted; the comparison demonstrates that this survey unit passes the criterion specified in the PDSP.

Survey Area: AH	Survey Unit: 771038	Building: 771

Description: Bldg 771 Second Floor North Section (West)

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)		Survey Type
							Alpha	Beta	Alpha	Beta	
8	516635	07/28/04	Electra	2380	DP-6	01/24/05	0.223	NA	48.0	NA	T
9	712563	07/28/04	SAC-4	1178	NA	09/17/04	0.333	NA	NA	10.0	R
10	712563	07/28/04	SAC-4	1410	NA	10/13/04	0.333	NA	10.0	10.0	R
11	712563	07/28/04	SAC-4	1491	NA	09/17/04	0.333	NA	10.0	10.0	R
12	712563	07/28/04	SAC-4	1354	NA	09/18/04	0.333	NA	10.0	10.0	R
13	712563	07/28/04	SAC-4	888	NA	12/17/04	0.333	NA	10.0	10.0	R
14	516635	07/29/04	Electra	1536	DP-6	12/22/04	0.218	NA	48.0	NA	Q
15	516635	07/27/04	Electra	1536	DP-6	12/22/04	0.218	NA	48.0	NA	T
16	712563	07/27/04	SAC-4	1178	NA	09/17/04	0.333	NA	10.0	10.0	R
17	712563	07/27/04	SAC-4	1410	NA	10/13/04	0.333	NA	10.0	10.0	R
18	712563	07/27/04	SAC-4	1491	NA	09/17/04	0.333	NA	10.0	10.0	R
19	712563	07/27/04	SAC-4	1354	NA	09/18/04	0.333	NA	10.0	10.0	R
20	712563	07/27/04	SAC-4	888	NA	12/17/04	0.333	NA	10.0	10.0	R

Survey Types: T = Total Surface Activity, Q = TSA QC, S = Scan, R = Removable Surface Activity, I = Investigation

Survey Area: AH	Survey Unit: 771038	Building: 771

Description: Bldg 771 Second Floor North Section (West)

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771038PRP-N001	13	-1.2	N/A	
771038PRP-N002	10	-1.5	N/A	
771038PRP-N003	13	0.3	N/A	
771038PRP-N004	12	-0.6	N/A	
771038PRP-N005	11	-0.3	N/A	
771038PRP-N006	12	0.9	N/A	
771038PRP-N007	9	6.0	N/A	
771038PRP-N008	13	-1.2	N/A	
771038PRP-N009	11	-0.3	N/A	
771038PRP-N010	12	0.9	N/A	
771038PRP-N011	9	1.5	N/A	
771038PRP-N012	13	-1.2	N/A	
771038PRP-N013	11	1.2	N/A	
771038PRP-N014	12	0.9	N/A	
771038PRP-N015	10	-1.5	N/A	
771038PRP-N016	13	0.3	N/A	
771038PRP-N017	13	-1.2	N/A	
771038PRP-N018	11	-0.3	N/A	
771038PRP-N019	9	1.5	N/A	
771038PRP-N020	10	4.5	N/A	
771038PRP-N021	12	-0.6	N/A	
771038PRP-N022	9	0.0	N/A	
771038PRP-N023	11	-0.3	N/A	
771038PRP-N024	12	-0.6	N/A	
771038PRP-N025	13	0.3	N/A	
771038PRP-N026	12	-0.6	N/A	
771038PRP-N027	12	-0.6	N/A	
771038PRP-N028	11	-0.3	N/A	
771038PRP-N029	11	-0.3	N/A	

Survey Area: AH	Survey Unit: 771038	Building: 771

Description: Bldg 771 Second Floor North Section (West)

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771038PRP-N030	10	-1.5	N/A	
771038PRP-N031	10	0.0	N/A	
771038PRP-N032	12	0.9	N/A	
771038PRP-N033	11	-0.3	N/A	
771038PRP-N034	9	0.0	N/A	
771038PRP-N035	12	-0.6	N/A	
771038PRP-N036	11	1.2	N/A	
771038PRP-N037	11	-0.3	N/A	
771038PRP-N038	13	-1.2	N/A	
771038PRP-N039	12	-0.6	N/A	
771038PRP-N040	11	-0.3	N/A	
771038PRP-N041	10	-1.5	N/A	
771038PRP-N042	13	-1.2	N/A	
771038PRP-N043	10	-1.5	N/A	
771038PRP-N044	13	-1.2	N/A	
771038PRP-N045	9	0.0	N/A	
771038PRP-N046	10	1.5	N/A	
771038PRP-N047	12	0.9	N/A	
771038PRP-N048	16	2.4	N/A	
771038PRP-N049	20	-0.6	N/A	
771038PRP-N050	19	-0.9	N/A	
771038PRP-N051	18	2.1	N/A	
771038PRP-N052	17	-0.9	N/A	
771038PRP-N053	16	-0.6	N/A	
771038PRP-N054	20	0.9	N/A	
771038PRP-N055	19	-0.9	N/A	
771038PRP-N056	18	-0.9	N/A	
771038PRP-N057	17	-0.9	N/A	
771038PRP-N058	11	-0.3	N/A	

Survey Area: AH	Survey Unit: 771038	Building: 771

Description: Bldg 771 Second Floor North Section (West)

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771038PRP-N059	12	-0.6	N/A	
771038PRP-N060	16	0.9	N/A	
771038PRP-N061	20	0.9	N/A	
771038PRP-N062	19	-0.9	N/A	
771038PRP-N063	18	-0.9	N/A	
771038PRP-N064	17	-0.9	N/A	
771038PRP-N065	16	-0.6	N/A	
771038PRP-N066	20	-0.6	N/A	
771038PRP-N067	19	0.6	N/A	
771038PRP-N068	18	0.6	N/A	
771038PRP-N069	17	-0.9	N/A	
771038PRP-N070	16	-0.6	N/A	
771038PRP-N071	20	-0.6	N/A	
771038PRP-N072	19	-0.9	N/A	
771038PRP-N073	18	0.6	N/A	
771038PRP-N074	17	0.6	N/A	
771038PRP-N075	16	0.9	N/A	

Comments:

Survey Area: AH	Survey Unit: 771038	Building: 771

Description: Bldg 771 Second Floor North Section (West)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771038PRP-N001	8	45.2	N/A	
771038PRP-N002	8	60.5	N/A	
771038PRP-N003	8	75.3	N/A	
771038PRP-N004	8	36.3	N/A	
771038QRP-N004	14	10.9	N/A	
771038PRP-N005	8	18.3	N/A	
771038PRP-N006	8	42.6	N/A	
771038PRP-N007	8	36.3	N/A	
771038PRP-N008	8	39.4	N/A	
771038PRP-N009	8	75.3	N/A	
771038PRP-N010	8	21.5	N/A	
771038PRP-N011	8	81.1	N/A	
771038PRP-N012	8	48.4	N/A	
771038PRP-N013	8	75.3	N/A	
771038PRP-N014	8	45.2	N/A	
771038PRP-N015	8	66.3	N/A	
771038PRP-N016	8	78.4	N/A	
771038QRP-N016	14	33.8	N/A	
771038PRP-N017	8	24.6	N/A	
771038PRP-N018	8	24.6	N/A	
771038PRP-N019	8	15.6	N/A	
771038PRP-N020	8	48.4	N/A	
771038PRP-N021	8	33.6	N/A	
771038PRP-N022	8	18.3	N/A	
771038PRP-N023	8	12.5	N/A	
771038PRP-N024	8	36.3	N/A	
771038PRP-N025	8	33.6	N/A	

Survey Area: AH	Survey Unit: 771038	Building: 771

Description: Bldg 771 Second Floor North Section (West)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771038PRP-N026	8	39.4	N/A	
771038PRP-N027	8	42.6	N/A	
771038PRP-N028	8	36.3	N/A	
771038PRP-N029	8	54.2	N/A	
771038QRP-N029	14	59.5	N/A	
771038PRP-N030	8	45.2	N/A	
771038PRP-N031	8	54.2	N/A	
771038PRP-N032	8	84.3	N/A	
771038PRP-N033	8	36.3	N/A	
771038PRP-N034	8	42.6	N/A	
771038PRP-N035	8	48.4	N/A	
771038PRP-N036	8	36.3	N/A	
771038PRP-N037	8	39.4	N/A	
771038PRP-N038	8	24.6	N/A	
771038PRP-N039	8	18.3	N/A	
771038PRP-N040	8	0.4	N/A	
771038PRP-N041	8	33.6	N/A	
771038PRP-N042	8	36.3	N/A	
771038PRP-N043	8	30.4	N/A	
771038PRP-N044	8	27.3	N/A	
771038PRP-N045	8	57.3	N/A	
771038PRP-N046	8	66.3	N/A	
771038PRP-N047	8	60.5	N/A	
771038PRP-N048	15	40.6	N/A	
771038PRP-N049	15	28.3	N/A	
771038PRP-N050	15	-2.0	N/A	
771038PRP-N051	15	0.7	N/A	

Survey Area: AH	Survey Unit: 771038	Building: 771

Description: Bldg 771 Second Floor North Section (West)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771038PRP-N052	15	7.2	N/A	
771038PRP-N053	15	25.5	N/A	
771038PRP-N054	15	-2.0	N/A	
771038PRP-N055	15	28.3	N/A	
771038PRP-N056	15	7.2	N/A	
771038PRP-N057	15	22.3	N/A	
771038PRP-N058	15	3.9	N/A	
771038PRP-N059	15	28.3	N/A	
771038PRP-N060	15	13.1	N/A	
771038PRP-N061	15	0.7	N/A	
771038PRP-N062	15	16.3	N/A	
771038PRP-N063	15	7.2	N/A	
771038PRP-N064	15	7.2	N/A	
771038QRP-N065	14	50.3	N/A	
771038PRP-N065	15	40.6	N/A	
771038PRP-N066	15	7.2	N/A	
771038PRP-N067	15	34.7	N/A	
771038PRP-N068	15	28.3	N/A	
771038PRP-N069	15	3.9	N/A	
771038PRP-N070	15	7.2	N/A	
771038PRP-N071	15	74.1	N/A	
771038PRP-N072	15	3.9	N/A	
771038PRP-N073	15	22.3	N/A	
771038PRP-N074	15	3.9	N/A	
771038PRP-N075	15	43.9	N/A	

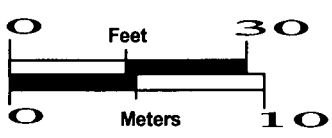
Comments:

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

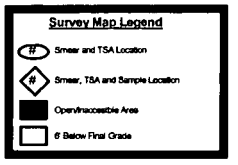
Survey Area: AH **Survey Unit: 771038** **Classification: 1**
Building: 771
Survey Unit Description: Rooms 235-238 (second floor, north end)

Total Floor Area: 494 sq. m **Total Area: 1640 sq. m** **Grid Size: 4m x 4m**

SURVEY UNIT 771038 - MAP 1 OF 2



N

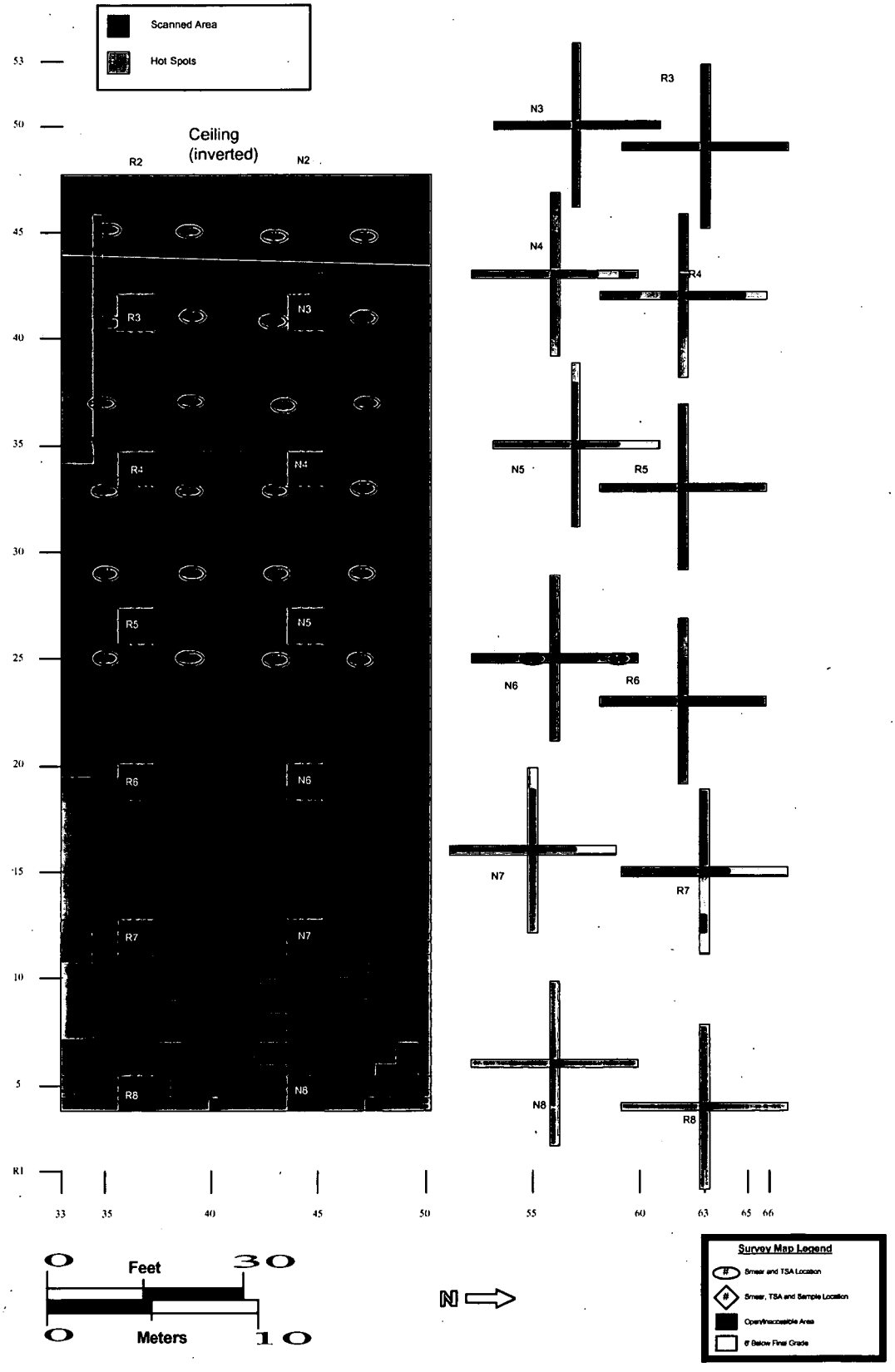


RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771038** **Classification: 1**
Building: 771
Survey Unit Description: Rooms 235-238 (second floor, north end)

Total Floor Area: 494 sq. m **Total Area: 1640 sq. m** **Grid Size: 4m x 4m**

SURVEY UNIT 771038 - MAP 2 OF 2



ATTACHMENT C

Survey Unit 771039
Radiological Data Summary and Survey Map

Survey Area: AH	Survey Unit: 771039	Building: 771

Description: Bldg. 771 2nd floor (west side)

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 60 | Nbr Biased Measurements Required: 0 | Nbr QC Required: 3

Nbr Random Measurements Performed: 60 | Nbr Biased Measurements Performed: 0 | Nbr QC Performed: 3

Alpha

Maximum:	81.7 dpm/100cm²
Minimum:	-2.6 dpm/100cm²
Mean:	28.2 dpm/100cm²
Standard Deviation:	18.5
QC Maximum:	28.6 dpm/100cm²
QC Minimum:	15.3 dpm/100cm²
QC Mean:	22.3 dpm/100cm²
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 60 | Nbr Biased Measurements Required: 0

Nbr Random Measurements Performed: 60 | Nbr Biased Measurements Performed: 0

Alpha

Maximum:	2.7 dpm/100cm²
Minimum:	-0.3 dpm/100cm²
Mean:	0.3 dpm/100cm²
Standard Deviation:	0.9
Transuranic DCGLw:	20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0 | Nbr Biased Required: 0

Nbr Random Collected: 0 | Nbr Biased Collected: 0

Conclusion - A comparison of the random, biased and QC measurement results against the PDSP Table 7-1 Surface Contamination Guideline limits was conducted; the comparison demonstrates that this survey unit passes the criterion specified in the PDSP.

Survey Area: AH	Survey Unit: 771039	Building: 771

Description: Bldg. 771 2nd floor (west side)

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)		Survey Type
							Alpha	Beta	Alpha	Beta	
38	511510	07/23/04	Electra	394	DP-6	12/04/04	0.222	NA	48.0	NA	T
39	513185	07/23/04	Electra	1551	DP-6	12/21/04	0.225	NA	48.0	NA	Q
40	513185	07/23/04	SAC-4	1178	NA	09/17/04	0.333	NA	10.0	10.0	R

Survey Types: T = Total Surface Activity, Q = TSA QC, S = Scan, R = Removable Surface Activity, I = Investigation

Printed On: 09/08/04 11:20

38

Survey Area: AH	Survey Unit: 771039	Building: 771

Description: Bldg. 771 2nd floor (west side)

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771039PRP-N001	40	-0.3	N/A	
771039PRP-N002	40	-0.3	N/A	
771039PRP-N003	40	-0.3	N/A	
771039PRP-N004	40	-0.3	N/A	
771039PRP-N005	40	1.2	N/A	
771039PRP-N006	40	-0.3	N/A	
771039PRP-N007	40	-0.3	N/A	
771039PRP-N008	40	-0.3	N/A	
771039PRP-N009	40	1.2	N/A	
771039PRP-N010	40	1.2	N/A	
771039PRP-N011	40	-0.3	N/A	
771039PRP-N012	40	-0.3	N/A	
771039PRP-N013	40	-0.3	N/A	
771039PRP-N014	40	-0.3	N/A	
771039PRP-N015	40	-0.3	N/A	
771039PRP-N016	40	1.2	N/A	
771039PRP-N017	40	-0.3	N/A	
771039PRP-N018	40	2.7	N/A	
771039PRP-N019	40	1.2	N/A	
771039PRP-N020	40	-0.3	N/A	
771039PRP-N021	40	1.2	N/A	
771039PRP-N022	40	1.2	N/A	
771039PRP-N023	40	-0.3	N/A	
771039PRP-N024	40	-0.3	N/A	
771039PRP-N025	40	-0.3	N/A	
771039PRP-N026	40	-0.3	N/A	
771039PRP-N027	40	2.7	N/A	
771039PRP-N028	40	1.2	N/A	
771039PRP-N029	40	-0.3	N/A	

Survey Area: AH	Survey Unit: 771039	Building: 771

Description: Bldg. 771 2nd floor (west side)

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771039PRP-N030	40	-0.3	N/A	
771039PRP-N031	40	-0.3	N/A	
771039PRP-N032	40	1.2	N/A	
771039PRP-N033	40	1.2	N/A	
771039PRP-N034	40	-0.3	N/A	
771039PRP-N035	40	1.2	N/A	
771039PRP-N036	40	-0.3	N/A	
771039PRP-N037	40	1.2	N/A	
771039PRP-N038	40	-0.3	N/A	
771039PRP-N039	40	-0.3	N/A	
771039PRP-N040	40	-0.3	N/A	
771039PRP-N041	40	1.2	N/A	
771039PRP-N042	40	2.7	N/A	
771039PRP-N043	40	1.2	N/A	
771039PRP-N044	40	2.7	N/A	
771039PRP-N045	40	-0.3	N/A	
771039PRP-N046	40	-0.3	N/A	
771039PRP-N047	40	-0.3	N/A	
771039PRP-N048	40	1.2	N/A	
771039PRP-N049	40	1.2	N/A	
771039PRP-N050	40	1.2	N/A	
771039PRP-N051	40	-0.3	N/A	
771039PRP-N052	40	-0.3	N/A	
771039PRP-N053	40	-0.3	N/A	
771039PRP-N054	40	-0.3	N/A	
771039PRP-N055	40	-0.3	N/A	
771039PRP-N056	40	-0.3	N/A	
771039PRP-N057	40	-0.3	N/A	
771039PRP-N058	40	-0.3	N/A	

40

Survey Area: AH	Survey Unit: 771039	Building: 771

Description: Bldg. 771 2nd floor (west side)

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771039PRP-N059	40	-0.3	N/A	
771039PRP-N060	40	-0.3	N/A	

Comments:

41

Survey Area: AH	Survey Unit: 771039	Building: 771

Description: Bldg. 771 2nd floor (west side)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771039PRP-N001	38	30.3	N/A	
771039PRP-N002	38	39.3	N/A	
771039PRP-N003	38	9.6	N/A	
771039PRP-N004	38	45.6	N/A	
771039PRP-N005	38	30.3	N/A	
771039PRP-N006	38	36.6	N/A	
771039PRP-N007	38	36.6	N/A	
771039PRP-N008	38	36.6	N/A	
771039PRP-N009	38	12.3	N/A	
771039PRP-N010	38	6.4	N/A	
771039PRP-N011	38	42.5	N/A	
771039PRP-N012	38	39.3	N/A	
771039PRP-N013	38	9.6	N/A	
771039PRP-N014	38	21.3	N/A	
771039PRP-N015	38	15.4	N/A	
771039QRP-N015	39	22.9	N/A	
771039PRP-N016	38	57.3	N/A	
771039PRP-N017	38	3.3	N/A	
771039PRP-N018	38	45.6	N/A	
771039PRP-N019	38	21.3	N/A	
771039PRP-N020	38	15.4	N/A	
771039PRP-N021	38	12.3	N/A	
771039PRP-N022	38	30.3	N/A	
771039PRP-N023	38	33.5	N/A	
771039PRP-N024	38	0.6	N/A	
771039PRP-N025	38	-2.6	N/A	
771039PRP-N026	38	-2.6	N/A	

Survey Area: AH	Survey Unit: 771039	Building: 771

Description: Bldg. 771 2nd floor (west side)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771039PRP-N027	38	42.5	N/A	
771039QRP-N027	39	28.6	N/A	
771039PRP-N028	38	30.3	N/A	
771039PRP-N029	38	57.3	N/A	
771039PRP-N030	38	54.6	N/A	
771039PRP-N031	38	54.6	N/A	
771039PRP-N032	38	3.3	N/A	
771039PRP-N033	38	48.3	N/A	
771039PRP-N034	38	9.6	N/A	
771039PRP-N035	38	24.4	N/A	
771039PRP-N036	38	39.3	N/A	
771039PRP-N037	38	24.4	N/A	
771039PRP-N038	38	42.5	N/A	
771039PRP-N039	38	24.4	N/A	
771039PRP-N040	38	42.5	N/A	
771039PRP-N041	38	45.6	N/A	
771039PRP-N042	38	81.7	N/A	
771039PRP-N043	38	33.5	N/A	
771039PRP-N044	38	42.5	N/A	
771039PRP-N045	38	72.6	N/A	
771039QRP-N045	39	15.3	N/A	
771039PRP-N046	38	15.4	N/A	
771039PRP-N047	38	18.6	N/A	
771039PRP-N048	38	21.3	N/A	
771039PRP-N049	38	24.4	N/A	
771039PRP-N050	38	3.3	N/A	
771039PRP-N051	38	6.4	N/A	

Survey Area: AH	Survey Unit: 771039	Building: 771

Description: Bldg. 771 2nd floor (west side)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771039PRP-N052	38	18.6	N/A	
771039PRP-N053	38	51.5	N/A	
771039PRP-N054	38	18.6	N/A	
771039PRP-N055	38	18.6	N/A	
771039PRP-N056	38	9.6	N/A	
771039PRP-N057	38	30.3	N/A	
771039PRP-N058	38	15.4	N/A	
771039PRP-N059	38	30.3	N/A	
771039PRP-N060	38	12.3	N/A	

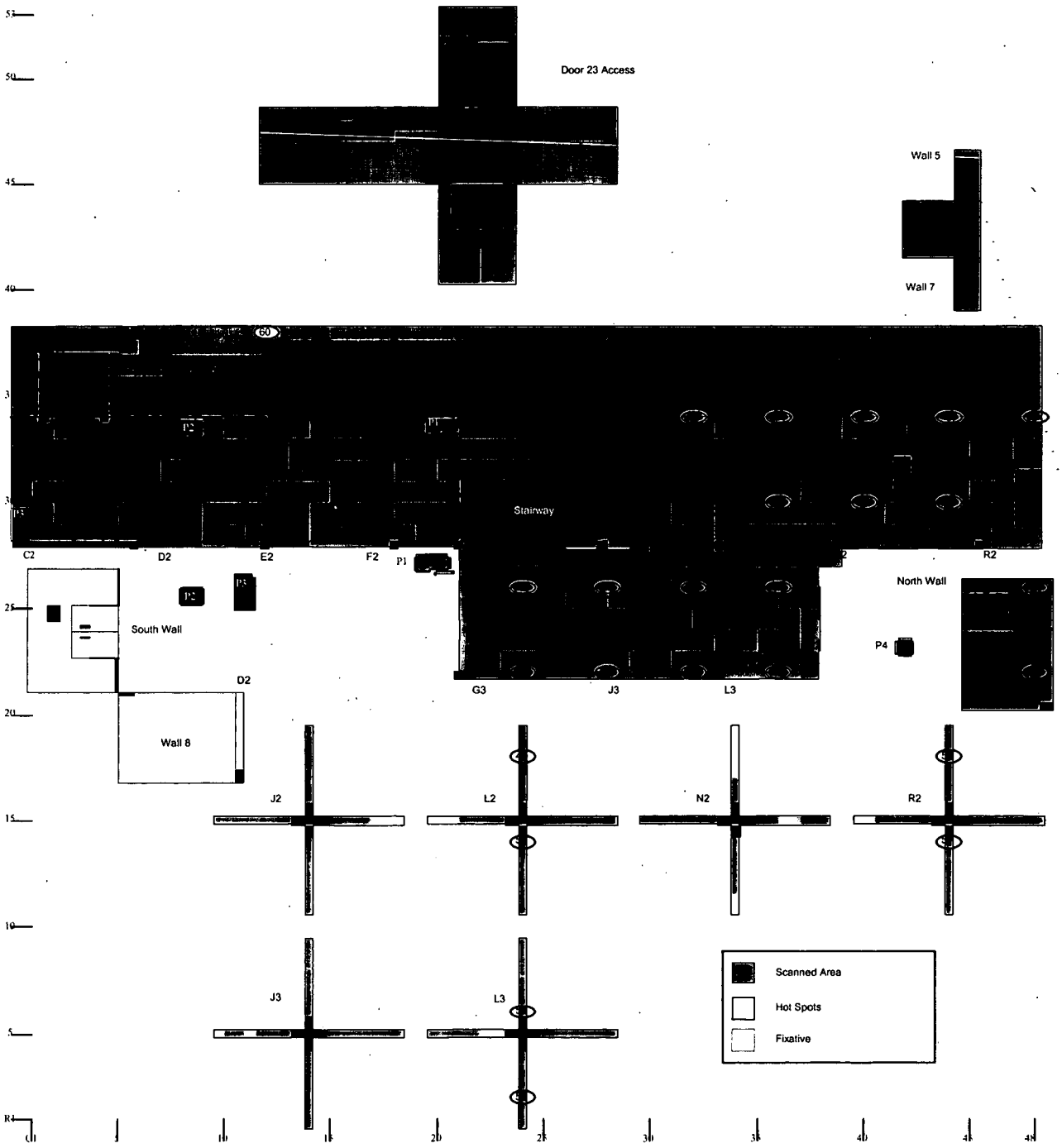
Comments:

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771039** **Classification: 1**
Building: 771
Survey Unit Description: 2nd Floor (west side)

Total Floor Area: 388 sq. m **Total Area: 1301 sq. m** **Grid Size: 4m x 4m**

SURVEY UNIT 771039 - MAP 1 OF 2



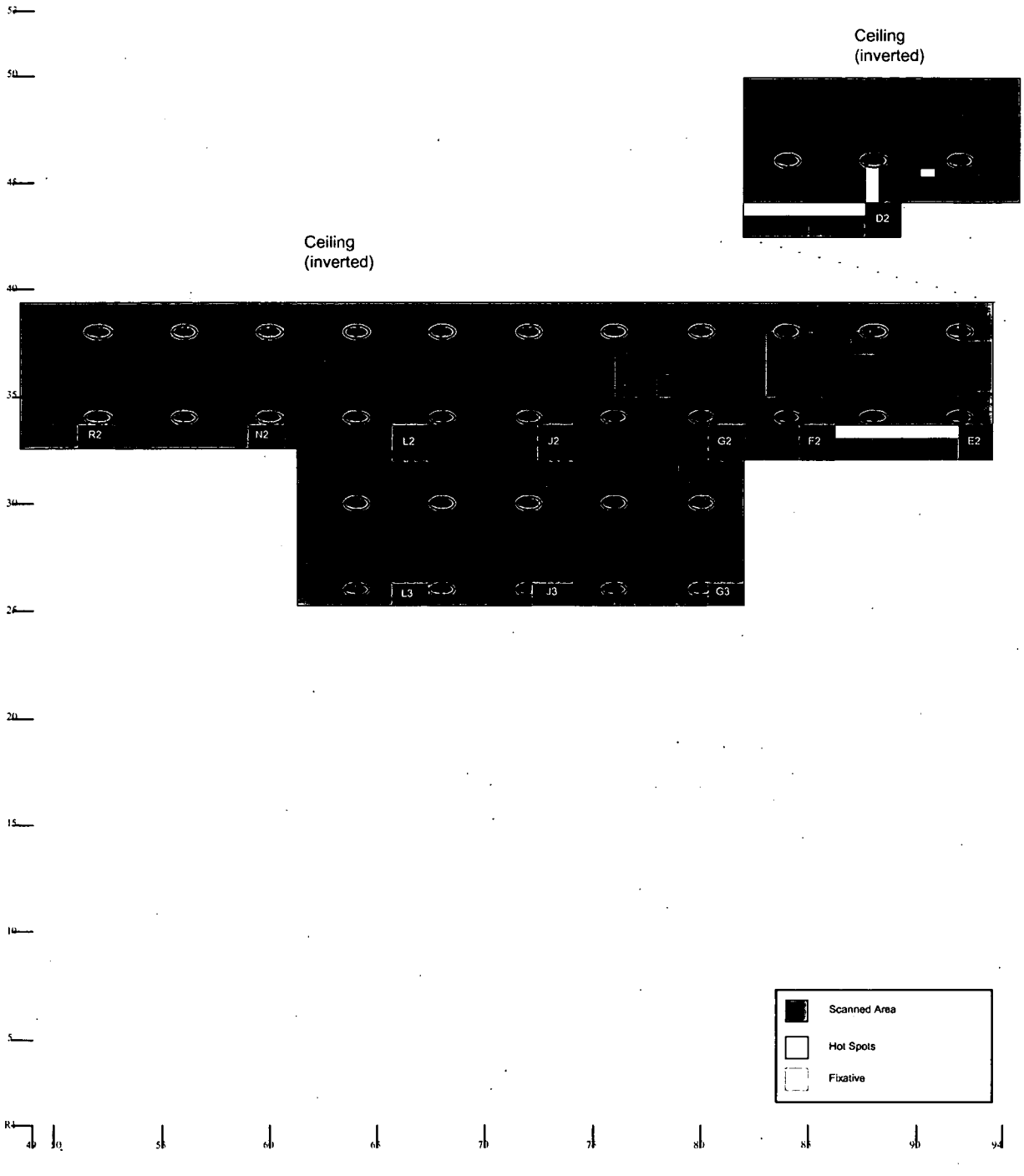
45

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771039** **Classification: 1**
Building: 771
Survey Unit Description: 2nd Floor (west side)

Total Floor Area: 388 sq. m **Total Area: 1301 sq. m** **Grid Size: 4m x 4m**

SURVEY UNIT 771039 - MAP 2 OF 2



ATTACHMENT D

Survey Unit 771041
Radiological Data Summary and Survey Map

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 101 | Nbr Biased Measurements Required: 0 | Nbr QC Required: 6

Nbr Random Measurements Performed: 101 | Nbr Biased Measurements Performed: 0 | Nbr QC Performed: 6

Alpha

Maximum:	88.8 dpm/100cm²
Minimum:	-7.6 dpm/100cm²
Mean:	35.1 dpm/100cm²
Standard Deviation:	20.7
QC Maximum:	82.0 dpm/100cm²
QC Minimum:	25.5 dpm/100cm²
QC Mean:	40.9 dpm/100cm²
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 101 | Nbr Biased Measurements Required: 0

Nbr Random Measurements Performed: 101 | Nbr Biased Measurements Performed: 0

Alpha

Maximum:	5.4 dpm/100cm²
Minimum:	-0.9 dpm/100cm²
Mean:	-0.1 dpm/100cm²
Standard Deviation:	1.1
Transuranic DCGLw:	20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0 | Nbr Biased Required: 0

Nbr Random Collected: 0 | Nbr Biased Collected: 0

Conclusion - A comparison of the random, biased and QC measurement results against the PDSP Table 7-1 Surface Contamination Guideline limits was conducted; the comparison demonstrates that this survey unit passes the criterion specified in the PDSP.

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)		Survey Type
							Alpha	Beta	Alpha	Beta	
20	712563	07/26/04	Electra	394	DP-6	12/04/04	0.222	NA	48.0	NA	T
21	515878	07/27/04	SAC-4	1178	NA	09/17/04	0.333	NA	NA	10.0	R
22	515878	07/27/04	SAC-4	1410	NA	10/13/04	0.333	NA	NA	10.0	R
23	515878	07/27/04	SAC-4	1491	NA	09/17/04	0.333	NA	NA	10.0	R
24	515878	07/27/04	SAC-4	1354	NA	09/18/04	0.333	NA	NA	10.0	R
25	515878	07/27/04	SAC-4	888	NA	12/17/04	0.333	NA	NA	10.0	R
26	514979	07/27/04	Electra	1551	DP-6	12/21/04	0.225	NA	48.0	NA	Q

Survey Types: T = Total Surface Activity, Q = TSA QC, S = Scan, R = Removable Surface Activity, I = Investigation

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771041PRP-N001	21	-0.6	N/A	
771041PRP-N002	22	-0.9	N/A	
771041PRP-N003	23	-0.9	N/A	
771041PRP-N004	24	0.6	N/A	
771041PRP-N005	25	2.4	N/A	
771041PRP-N006	21	0.9	N/A	
771041PRP-N007	22	0.6	N/A	
771041PRP-N008	23	-0.9	N/A	
771041PRP-N009	24	-0.9	N/A	
771041PRP-N010	25	-0.6	N/A	
771041PRP-N011	21	0.9	N/A	
771041PRP-N012	22	-0.9	N/A	
771041PRP-N013	23	-0.9	N/A	
771041PRP-N014	24	-0.9	N/A	
771041PRP-N015	25	-0.6	N/A	
771041PRP-N016	21	5.4	N/A	
771041PRP-N017	22	-0.9	N/A	
771041PRP-N018	23	2.1	N/A	
771041PRP-N019	24	0.6	N/A	
771041PRP-N020	25	-0.6	N/A	
771041PRP-N021	21	-0.6	N/A	
771041PRP-N022	22	-0.9	N/A	
771041PRP-N023	23	-0.9	N/A	
771041PRP-N024	24	-0.9	N/A	
771041PRP-N025	25	-0.6	N/A	
771041PRP-N026	21	0.9	N/A	
771041PRP-N027	22	-0.9	N/A	
771041PRP-N028	23	-0.9	N/A	
771041PRP-N029	24	-0.9	N/A	

50

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771041PRP-N030	25	0.9	N/A	
771041PRP-N031	21	2.4	N/A	
771041PRP-N032	22	2.1	N/A	
771041PRP-N033	23	-0.9	N/A	
771041PRP-N034	24	-0.9	N/A	
771041PRP-N035	25	0.9	N/A	
771041PRP-N036	21	-0.6	N/A	
771041PRP-N037	22	-0.9	N/A	
771041PRP-N038	23	-0.9	N/A	
771041PRP-N039	24	0.6	N/A	
771041PRP-N040	25	0.9	N/A	
771041PRP-N041	21	-0.6	N/A	
771041PRP-N042	22	0.6	N/A	
771041PRP-N043	23	-0.9	N/A	
771041PRP-N044	24	0.6	N/A	
771041PRP-N045	25	-0.6	N/A	
771041PRP-N046	21	-0.6	N/A	
771041PRP-N047	22	-0.9	N/A	
771041PRP-N048	23	-0.9	N/A	
771041PRP-N049	24	0.6	N/A	
771041PRP-N050	25	0.9	N/A	
771041PRP-N051	21	-0.6	N/A	
771041PRP-N052	22	-0.9	N/A	
771041PRP-N053	23	-0.9	N/A	
771041PRP-N054	24	-0.9	N/A	
771041PRP-N055	25	-0.6	N/A	
771041PRP-N056	21	0.9	N/A	
771041PRP-N057	22	-0.9	N/A	
771041PRP-N058	23	0.6	N/A	

51

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771041PRP-N059	24	-0.9	N/A	
771041PRP-N060	25	0.9	N/A	
771041PRP-N061	21	0.9	N/A	
771041PRP-N062	22	-0.9	N/A	
771041PRP-N063	23	-0.9	N/A	
771041PRP-N064	24	-0.9	N/A	
771041PRP-N065	25	-0.6	N/A	
771041PRP-N066	21	-0.6	N/A	
771041PRP-N067	22	-0.9	N/A	
771041PRP-N068	23	0.6	N/A	
771041PRP-N069	24	-0.9	N/A	
771041PRP-N070	25	-0.6	N/A	
771041PRP-N071	21	-0.6	N/A	
771041PRP-N072	22	0.6	N/A	
771041PRP-N073	23	-0.9	N/A	
771041PRP-N074	24	0.6	N/A	
771041PRP-N075	25	-0.6	N/A	
771041PRP-N076	21	0.9	N/A	
771041PRP-N077	22	3.6	N/A	
771041PRP-N078	23	-0.9	N/A	
771041PRP-N079	24	-0.9	N/A	
771041PRP-N080	25	-0.6	N/A	
771041PRP-N081	21	-0.6	N/A	
771041PRP-N082	22	0.6	N/A	
771041PRP-N083	23	-0.9	N/A	
771041PRP-N084	24	-0.9	N/A	
771041PRP-N085	25	2.4	N/A	
771041PRP-N086	21	-0.6	N/A	
771041PRP-N087	22	0.6	N/A	

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771041PRP-N088	23	0.6	N/A	
771041PRP-N089	24	-0.9	N/A	
771041PRP-N090	25	-0.6	N/A	
771041PRP-N091	21	-0.6	N/A	
771041PRP-N092	22	-0.9	N/A	
771041PRP-N093	23	0.6	N/A	
771041PRP-N094	24	-0.9	N/A	
771041PRP-N095	25	0.9	N/A	
771041PRP-N096	21	-0.6	N/A	
771041PRP-N097	22	0.6	N/A	
771041PRP-N098	23	-0.9	N/A	
771041PRP-N099	24	-0.9	N/A	
771041PRP-N100	25	-0.6	N/A	
771041PRP-N101	21	0.9	N/A	

Comments:

53

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771041PRP-N001	20	46.4	N/A	
771041PRP-N002	20	10.4	N/A	
771041PRP-N003	20	28.4	N/A	
771041PRP-N004	20	46.4	N/A	
771041PRP-N005	20	34.7	N/A	
771041PRP-N006	20	22.5	N/A	
771041PRP-N007	20	25.7	N/A	
771041PRP-N008	20	19.4	N/A	
771041PRP-N009	20	28.4	N/A	
771041PRP-N010	20	22.5	N/A	
771041PRP-N011	20	61.7	N/A	
771041PRP-N012	20	58.6	N/A	
771041PRP-N013	20	10.4	N/A	
771041PRP-N014	20	13.5	N/A	
771041PRP-N015	20	58.6	N/A	
771041PRP-N016	20	37.4	N/A	
771041PRP-N017	20	61.7	N/A	
771041PRP-N018	20	10.4	N/A	
771041PRP-N019	20	19.4	N/A	
771041QRP-N019	26	40.6	N/A	
771041PRP-N020	20	34.7	N/A	
771041PRP-N021	20	28.4	N/A	
771041PRP-N022	20	67.6	N/A	
771041PRP-N023	20	19.4	N/A	
771041PRP-N024	20	31.5	N/A	
771041PRP-N025	20	10.4	N/A	
771041PRP-N026	20	25.7	N/A	

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771041QRP-N026	26	28.6	N/A	
771041PRP-N027	20	37.4	N/A	
771041PRP-N028	20	79.7	N/A	
771041PRP-N029	20	28.4	N/A	
771041PRP-N030	20	70.7	N/A	
771041PRP-N031	20	34.7	N/A	
771041PRP-N032	20	88.8	N/A	
771041PRP-N033	20	61.7	N/A	
771041QRP-N033	26	43.3	N/A	
771041PRP-N034	20	22.5	N/A	
771041PRP-N035	20	76.6	N/A	
771041PRP-N036	20	61.7	N/A	
771041PRP-N037	20	16.7	N/A	
771041PRP-N038	20	4.5	N/A	
771041PRP-N039	20	25.7	N/A	
771041PRP-N040	20	28.4	N/A	
771041PRP-N041	20	25.7	N/A	
771041PRP-N042	20	19.4	N/A	
771041PRP-N043	20	31.5	N/A	
771041PRP-N044	20	55.4	N/A	
771041PRP-N045	20	25.7	N/A	
771041PRP-N046	20	46.4	N/A	
771041PRP-N047	20	52.7	N/A	
771041PRP-N048	20	87.0	N/A	
771041PRP-N049	20	19.4	N/A	
771041PRP-N050	20	37.4	N/A	
771041PRP-N051	20	34.7	N/A	

55

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771041PRP-N052	20	37.4	N/A	
771041PRP-N053	20	40.6	N/A	
771041PRP-N054	20	34.7	N/A	
771041PRP-N055	20	55.4	N/A	
771041PRP-N056	20	30.2	N/A	
771041PRP-N057	20	40.6	N/A	
771041PRP-N058	20	58.6	N/A	
771041PRP-N059	20	25.7	N/A	
771041PRP-N060	20	49.6	N/A	
771041PRP-N061	20	13.5	N/A	
771041PRP-N062	20	19.4	N/A	
771041PRP-N063	20	28.4	N/A	
771041PRP-N064	20	52.7	N/A	
771041PRP-N065	20	16.7	N/A	
771041PRP-N066	20	1.4	N/A	
771041PRP-N067	20	34.7	N/A	
771041PRP-N068	20	10.4	N/A	
771041PRP-N069	20	43.7	N/A	
771041PRP-N070	20	31.5	N/A	
771041PRP-N071	20	4.5	N/A	
771041PRP-N072	20	13.5	N/A	
771041PRP-N073	20	34.7	N/A	
771041PRP-N074	20	28.4	N/A	
771041PRP-N075	20	46.4	N/A	
771041PRP-N076	20	25.7	N/A	
771041PRP-N077	20	79.7	N/A	
771041QRP-N077	26	82.0	N/A	

Survey Area: AH	Survey Unit: 771041	Building: 771

Description: 771 2nd Floor Room 249, West End

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771041PRP-N078	20	19.4	N/A	
771041PRP-N079	20	13.5	N/A	
771041PRP-N080	20	-7.6	N/A	
771041QRP-N080	26	25.5	N/A	
771041PRP-N081	20	34.7	N/A	
771041PRP-N082	20	28.4	N/A	
771041QRP-N082	26	25.5	N/A	
771041PRP-N083	20	37.4	N/A	
771041PRP-N084	20	16.7	N/A	
771041PRP-N085	20	-7.6	N/A	
771041PRP-N086	20	19.4	N/A	
771041PRP-N087	20	28.4	N/A	
771041PRP-N088	20	34.7	N/A	
771041PRP-N089	20	34.7	N/A	
771041PRP-N090	20	28.4	N/A	
771041PRP-N091	20	28.4	N/A	
771041PRP-N092	20	49.6	N/A	
771041PRP-N093	20	43.7	N/A	
771041PRP-N094	20	85.6	N/A	
771041PRP-N095	20	70.7	N/A	
771041PRP-N096	20	43.7	N/A	
771041PRP-N097	20	46.4	N/A	
771041PRP-N098	20	70.7	N/A	
771041PRP-N099	20	19.4	N/A	
771041PRP-N100	20	19.4	N/A	
771041PRP-N101	20	22.5	N/A	

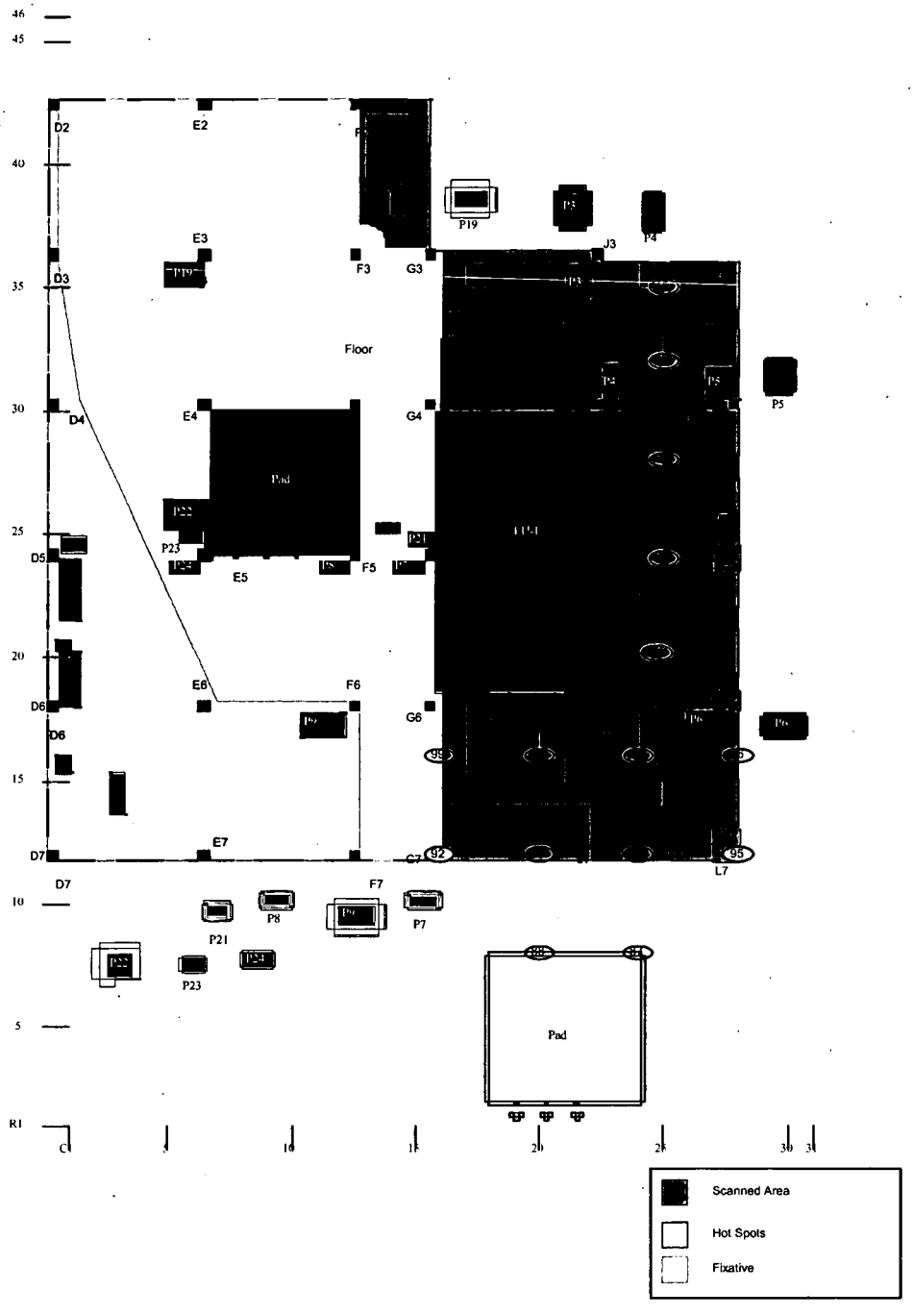
Comments:

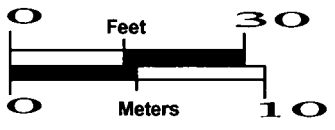
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771041** **Classification: 1**
Building: 771
Survey Unit Description: Room 249 (west side)

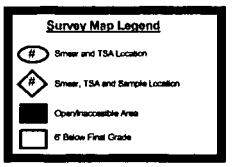
Total Floor Area: 671 sq. m **Total Area: 1958 sq. m** **Grid Size: 4m x 4m**

SURVEY UNIT 771041 - MAP 1 OF 3





N

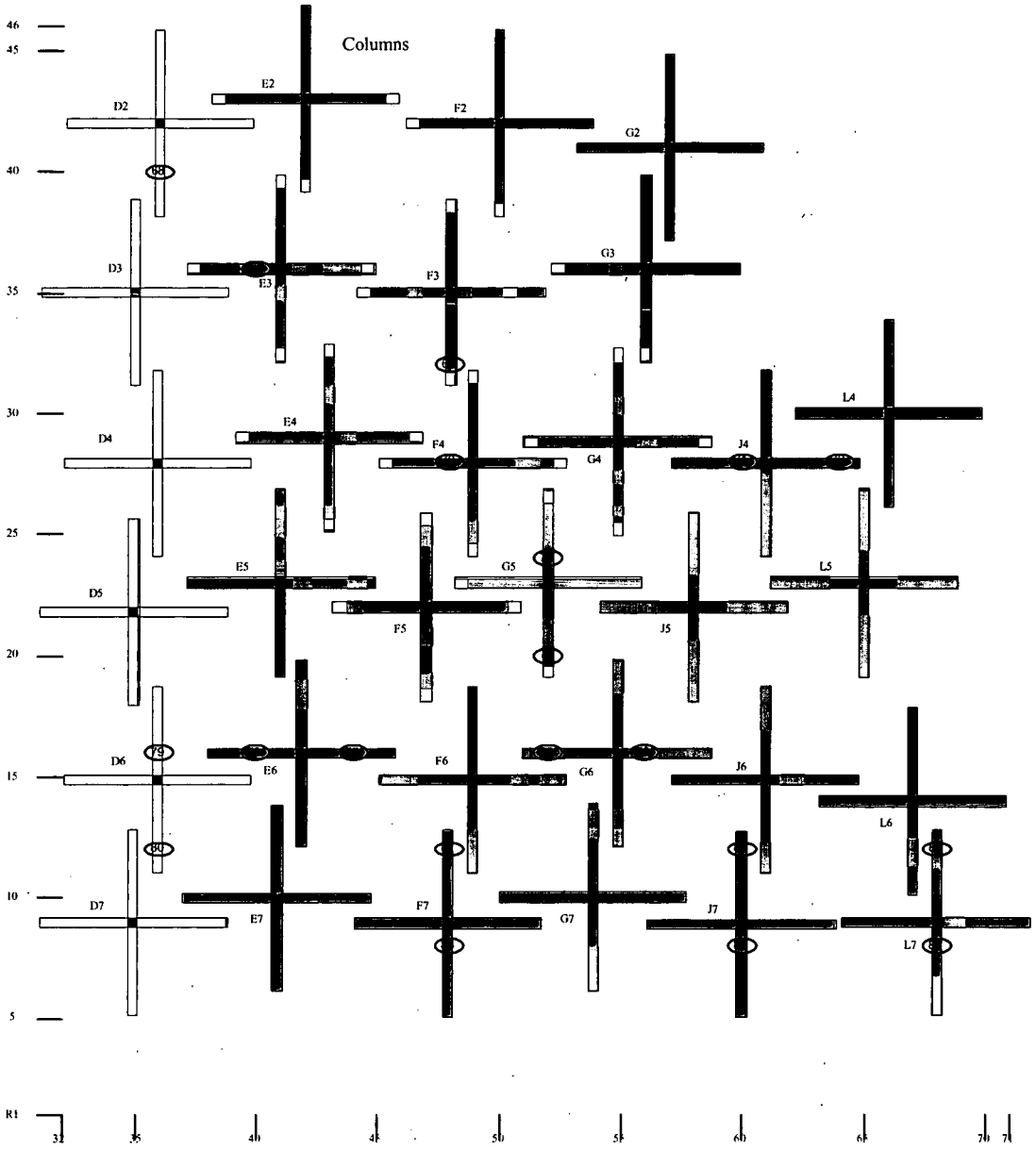


RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771041** **Classification: 1**
Building: 771
Survey Unit Description: Room 249

Total Floor Area: 671 sq. m **Total Area: 1958 sq. m** **Grid Size: 4m 4m**

SURVEY UNIT 771041 - MAP 2 OF 3



RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH Survey Unit: 771041 Classification: 1
Building: 771
Survey Unit Description: Room 249

Total Floor Area: 671 sq. m Total Area: 1958 sq. m Grid Size: 4m x 4m

SURVEY UNIT 771041 - MAP 3 OF 3

Scanned Area
Hot Spots
Fixative

0 Feet 30
0 Meters 10

N

Survey Map Legend
Smear and TSA Location
Smear, TSA and Sample Location
Open/Inaccessible Area
6' Below Final Grade

60

ATTACHMENT E

Survey Unit 771043
Radiological Data Summary and Survey Map

Survey Area: AH	Survey Unit: 771043	Building: 771

Description: 2nd Floor B771, Room 283 West (West of Column Line 8), upper walls and ceiling in areas above 6 foot below final grade.

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 19 | Nbr Biased Measurements Required: 0 | Nbr QC Required: 2

Nbr Random Measurements Performed: 19 | Nbr Biased Measurements Performed: 0 | Nbr QC Performed: 2

Alpha

Maximum:	87.3 dpm/100cm²
Minimum:	4.7 dpm/100cm²
Mean:	34.4 dpm/100cm²
Standard Deviation:	24.2
QC Maximum:	46.3 dpm/100cm²
QC Minimum:	20.2 dpm/100cm²
QC Mean:	33.3 dpm/100cm²
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 19 | Nbr Biased Measurements Required: 0

Nbr Random Measurements Performed: 19 | Nbr Biased Measurements Performed: 0

Alpha

Maximum:	2.4 dpm/100cm²
Minimum:	-0.6 dpm/100cm²
Mean:	0.1 dpm/100cm²
Standard Deviation:	0.9
Transuranic DCGLw:	20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0 | Nbr Biased Required: 0

Nbr Random Collected: 0 | Nbr Biased Collected: 0

Conclusion - A comparison of the random, biased and QC measurement results against the PDSP Table 7-1 Surface Contamination Guideline limits was conducted; the comparison demonstrates that this survey unit passes the criterion specified in the PDSP.

62

Survey Area: AH	Survey Unit: 771043	Building: 771

Description: 2nd Floor B771, Room 283 West (West of Column Line 8), upper walls and ceiling in areas above 6 foot below final grade.

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)		Survey Type
							Alpha	Beta	Alpha	Beta	
7	514979	08/02/04	Electra	1536	DP-6	12/22/04	0.218	NA	48.0	NA	T
8	516635	08/02/04	Electra	2382	DP-6	01/24/05	0.230	NA	48.0	NA	Q
9	516635	08/02/04	SAC-4	1178	NA	09/17/04	0.333	NA	10.0	10.0	R
10	516635	08/02/04	SAC-4	1410	NA	10/13/04	0.333	NA	10.0	10.0	R

Survey Types: T = Total Surface Activity, Q = TSA QC, S = Scan, R = Removable Surface Activity, I = Investigation

63

Survey Area: AH	Survey Unit: 771043	Building: 771

Description: 2nd Floor B771, Room 283 West (West of Column Line 8), upper walls and ceiling in areas above 6 foot below final grade.

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771043PRP-N001	9	-0.3	N/A	
771043PRP-N002	10	0.9	N/A	
771043PRP-N003	9	-0.3	N/A	
771043PRP-N004	10	-0.6	N/A	
771043PRP-N005	9	-0.3	N/A	
771043PRP-N006	10	-0.6	N/A	
771043PRP-N007	9	-0.3	N/A	
771043PRP-N008	10	-0.6	N/A	
771043PRP-N009	9	-0.3	N/A	
771043PRP-N010	10	0.9	N/A	
771043PRP-N011	9	1.2	N/A	
771043PRP-N012	10	2.4	N/A	
771043PRP-N013	9	-0.3	N/A	
771043PRP-N014	10	-0.6	N/A	
771043PRP-N015	9	-0.3	N/A	
771043PRP-N016	10	0.9	N/A	
771043PRP-N017	9	-0.3	N/A	
771043PRP-N018	10	-0.6	N/A	
771043PRP-N019	9	1.2	N/A	

Comments:

Survey Area: AH	Survey Unit: 771043	Building: 771

Description: 2nd Floor B771, Room 283 West (West of Column Line 8), upper walls and ceiling in areas above 6 foot below final grade.

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771043PRP-N001	7	47.9	N/A	
771043PRP-N002	7	13.9	N/A	
771043QRP-N002	8	20.2	N/A	
771043PRP-N003	7	41.4	N/A	
771043PRP-N004	7	87.3	N/A	
771043PRP-N005	7	32.3	N/A	
771043PRP-N006	7	17.1	N/A	
771043PRP-N007	7	7.9	N/A	
771043PRP-N008	7	26.3	N/A	
771043PRP-N009	7	50.6	N/A	
771043PRP-N010	7	4.7	N/A	
771043PRP-N011	7	23.1	N/A	
771043PRP-N012	7	13.9	N/A	
771043PRP-N013	7	23.1	N/A	
771043PRP-N014	7	7.9	N/A	
771043PRP-N015	7	69.0	N/A	
771043PRP-N016	7	44.6	N/A	
771043PRP-N017	7	32.3	N/A	
771043PRP-N018	7	29.5	N/A	
771043PRP-N019	7	81.3	N/A	
771043QRP-N019	8	46.3	N/A	

Comments:

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771043** **Classification: 2**
Building: 771
Survey Unit Description: 2nd Floor (Room 283 upper walls and ceiling)

Total Floor Area: NA **Total Area: 1241 sq. m** **Grid Size: 8m x 8m**

SURVEY UNIT 771043 - MAP 1 OF 3

66

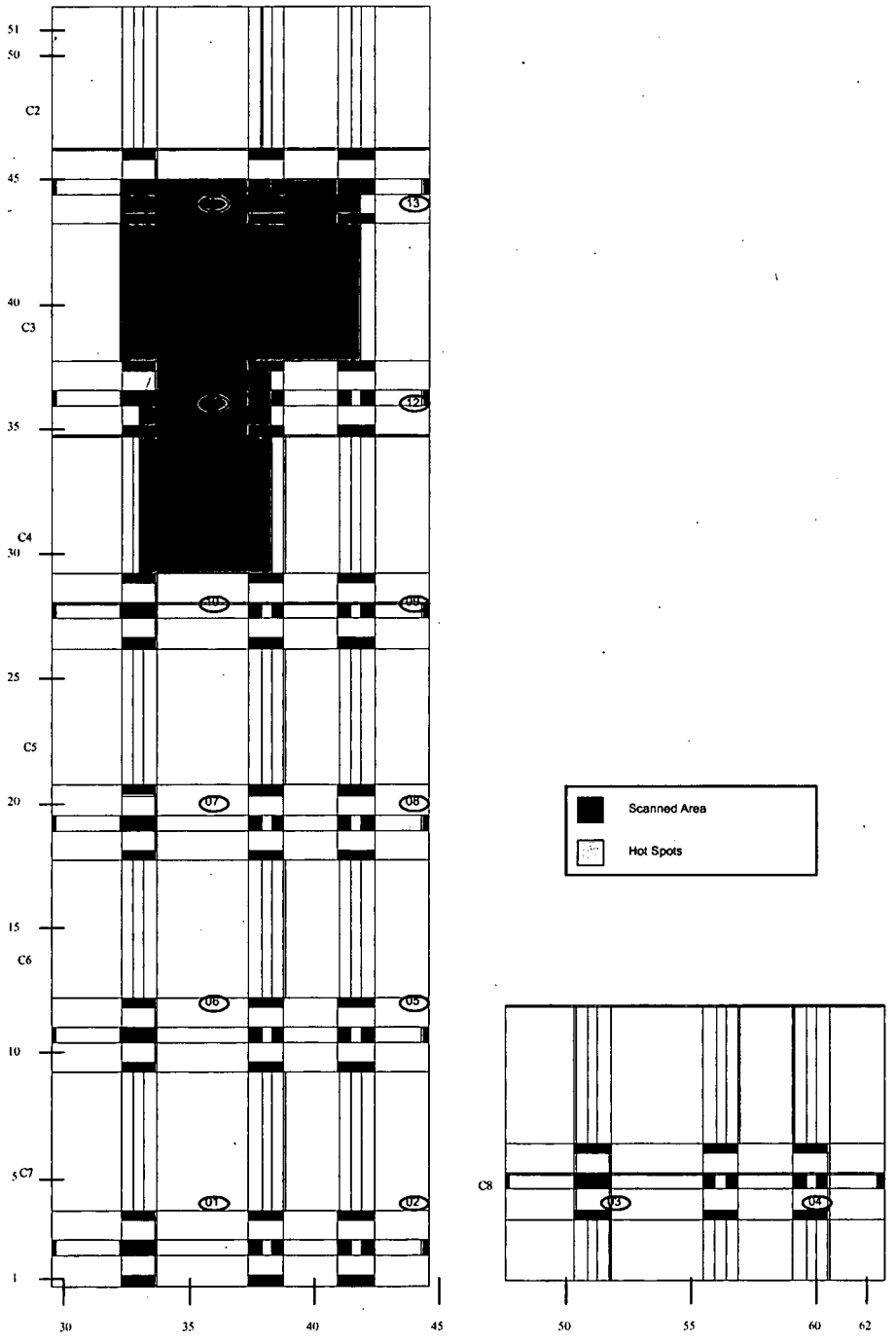
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771043** **Classification: 2**
Building: 771
Survey Unit Description: 2nd Floor (Room 283 upper walls and ceiling)

Total Floor Area: NA **Total Area: 1241 sq. m** **Grid Size: 8m x 8m**

SURVEY UNIT 771043 - MAP 2 OF 3

283 Ceiling (inverted)



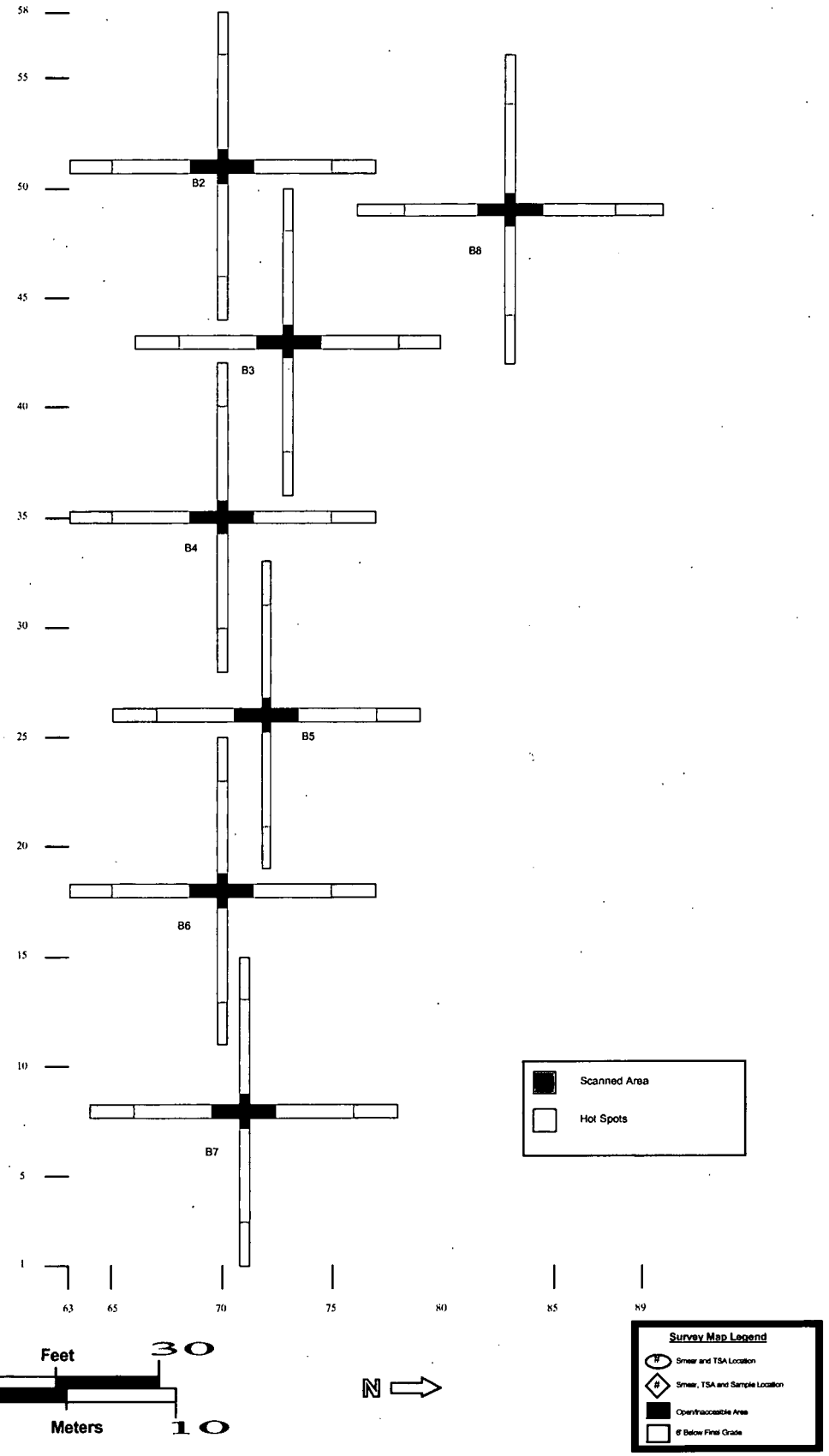
67

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771043** **Classification: 2**
Building: 771
Survey Unit Description: 2nd Floor (Room 283 upper walls and ceiling)

Total Floor Area: NA **Total Area: 1241 sq. m** **Grid Size: 15m x 15m**

SURVEY UNIT 771043 - MAP 3 OF 3



68

ATTACHMENT F

Survey Unit 771077
Radiological Data Summary and Survey Map

Survey Area: AH	Survey Unit: 771077	Building: 771

Description: 283 Lower Wall and Floor in areas that are above 6 feet below final grade

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 15 | Nbr Biased Measurements Required: 0 | Nbr QC Required: 2

Nbr Random Measurements Performed: 15 | Nbr Biased Measurements Performed: 0 | Nbr QC Performed: 2

Alpha

Maximum:	26.0 dpm/100cm²
Minimum:	-24.5 dpm/100cm²
Mean:	-6.9 dpm/100cm²
Standard Deviation:	13.0
QC Maximum:	54.8 dpm/100cm²
QC Minimum:	24.5 dpm/100cm²
QC Mean:	39.7 dpm/100cm²
Transuranic DCGL$_W$:	100.0 dpm/100cm²
Transuranic DCGL$_{EMC}$:	300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 15 | Nbr Biased Measurements Required: 0

Nbr Random Measurements Performed: 15 | Nbr Biased Measurements Performed: 0

Alpha

Maximum:	4.2 dpm/100cm²
Minimum:	-0.3 dpm/100cm²
Mean:	0.4 dpm/100cm²
Standard Deviation:	1.3
Transuranic DCGL$_W$:	20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0 | Nbr Biased Required: 0

Nbr Random Collected: 0 | Nbr Biased Collected: 0

Conclusion - A comparison of the random, biased and QC measurement results against the PDSP Table 7-1 Surface Contamination Guideline limits was conducted; the comparison demonstrates that this survey unit passes the criterion specified in the PDSP.

470

Survey Area: AH	Survey Unit: 771077	Building: 771

Description: 283 Lower Wall and Floor in areas that are above 6 feet below final grade

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)		Survey Type
							Alpha	Beta	Alpha	Beta	
1	513185	08/01/04	Electra	1375	DP-6	09/05/04	0.224	NA	48.0	NA	T
2	514510	08/01/04	Electra	1536	DP-6	08/10/04	0.218	NA	48.0	NA	Q
3	514510	08/01/04	SAC-4	1178	NA	08/17/04	0.333	NA	10.0	10.0	R

Survey Types: T = Total Surface Activity, Q = TSA QC, S = Scan, R = Removable Surface Activity, I = Investigation

71

Survey Area: AH	Survey Unit: 771077	Building: 771

Description: 283 Lower Wall and Floor in areas that are above 6 feet below final grade

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771077PRP-N001	3	-0.3	N/A	
771077PRP-N002	3	-0.3	N/A	
771077PRP-N003	3	1.2	N/A	
771077PRP-N004	3	1.2	N/A	
771077PRP-N005	3	1.2	N/A	
771077PRP-N006	3	-0.3	N/A	
771077PRP-N007	3	-0.3	N/A	
771077PRP-N008	3	4.2	N/A	
771077PRP-N009	3	1.2	N/A	
771077PRP-N010	3	-0.3	N/A	
771077PRP-N011	3	-0.3	N/A	
771077PRP-N012	3	-0.3	N/A	
771077PRP-N013	3	-0.3	N/A	
771077PRP-N014	3	-0.3	N/A	
771077PRP-N015	3	-0.3	N/A	

Comments:

Survey Area: AH	Survey Unit: 771077	Building: 771

Description: 283 Lower Wall and Floor in areas that are above 6 feet below final grade

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
771077PRP-N001	1	-3.9	N/A	
771077PRP-N002	1	8.1	N/A	
771077QRP-N002	2	24.5	N/A	
771077PRP-N003	1	-15.5	N/A	
771077PRP-N004	1	-18.7	N/A	
771077PRP-N005	1	-24.5	N/A	
771077PRP-N006	1	-15.5	N/A	
771077PRP-N007	1	-12.9	N/A	
771077PRP-N008	1	-18.7	N/A	
771077PRP-N009	1	-15.5	N/A	
771077PRP-N010	1	-6.6	N/A	
771077PRP-N011	1	2.3	N/A	
771077PRP-N012	1	26.0	N/A	
771077QRP-N012	2	54.8	N/A	
771077PRP-N013	1	-0.8	N/A	
771077PRP-N014	1	-9.7	N/A	
771077PRP-N015	1	2.3	N/A	

Comments:

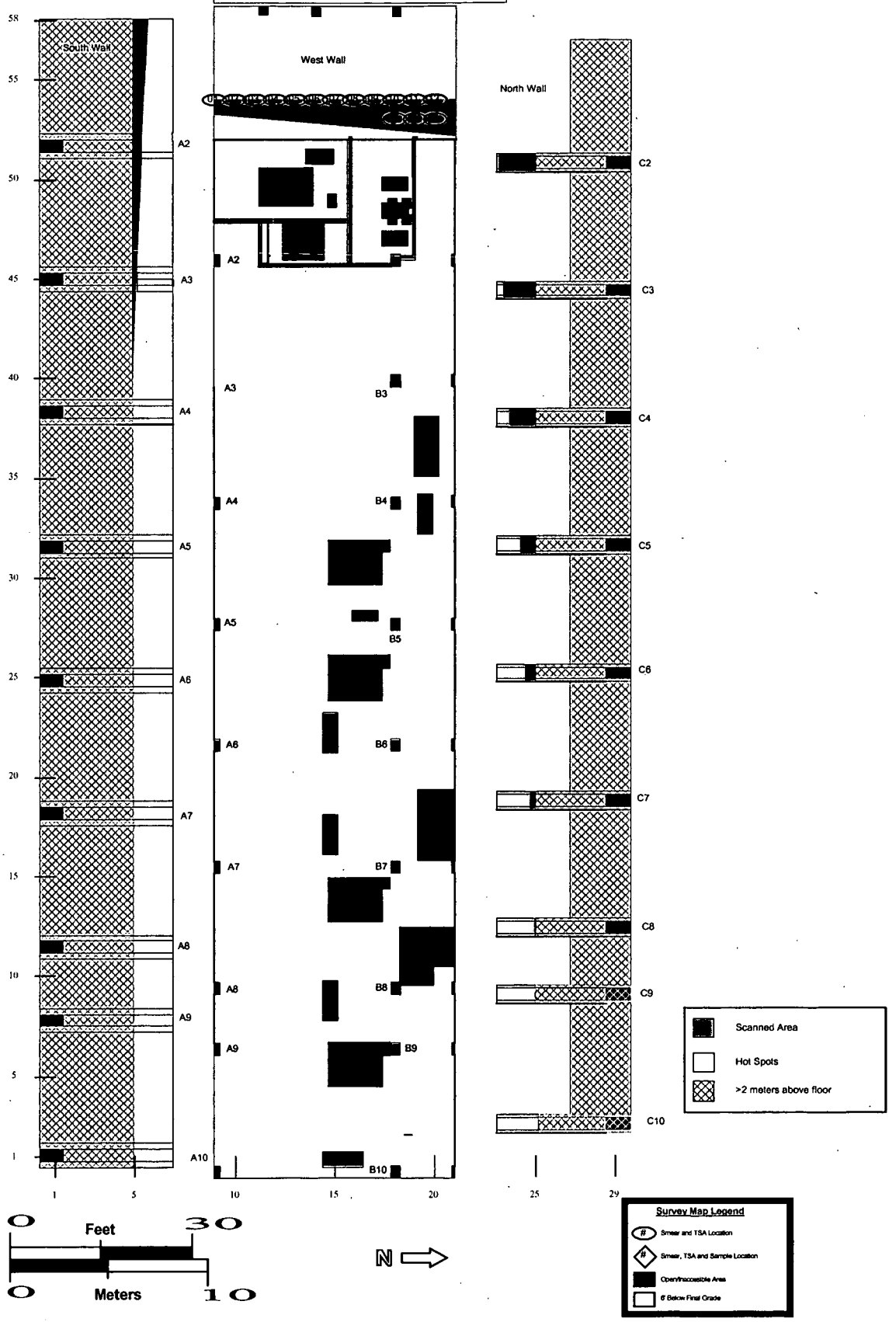
93

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771077** **Classification: 1**
Building: 771
Survey Unit Description: 2nd Floor (Room 283 lower walls and floor <6' below final grade)

Total Floor Area: NA **Total Area: 29 sq. m** **Grid Size: 1m x 1m**

SURVEY UNIT 771077 - MAP 1 OF 2



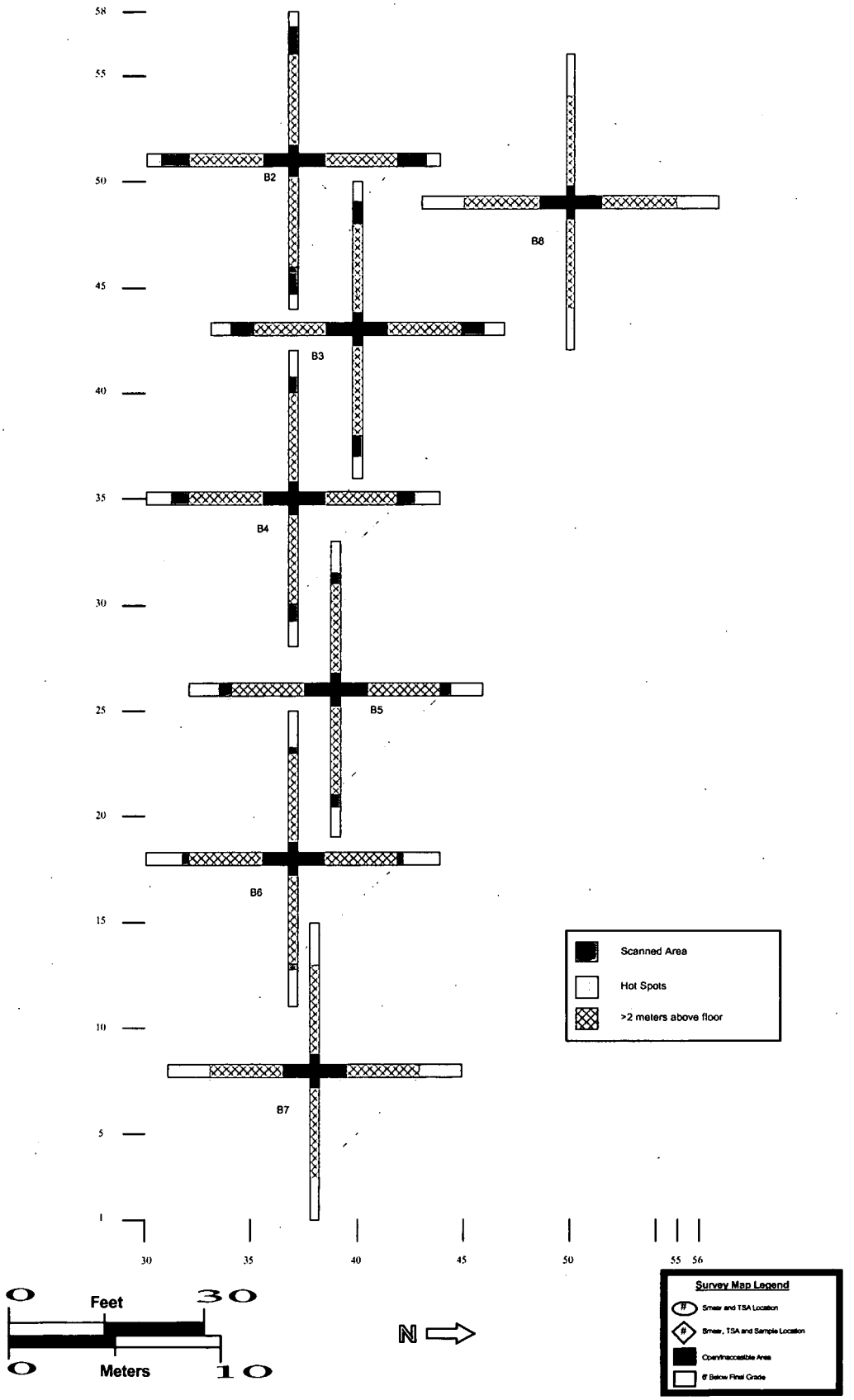
74

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771077** **Classification: 1**
Building: 771
Survey Unit Description: 2nd Floor (Room 283 lower walls and floor <6' below final grade)

Total Floor Area: NA **Total Area: 29 sq. m** **Grid Size: 1m x 1m**

SURVEY UNIT 771077 - MAP 2 OF 2



75

ATTACHMENT G

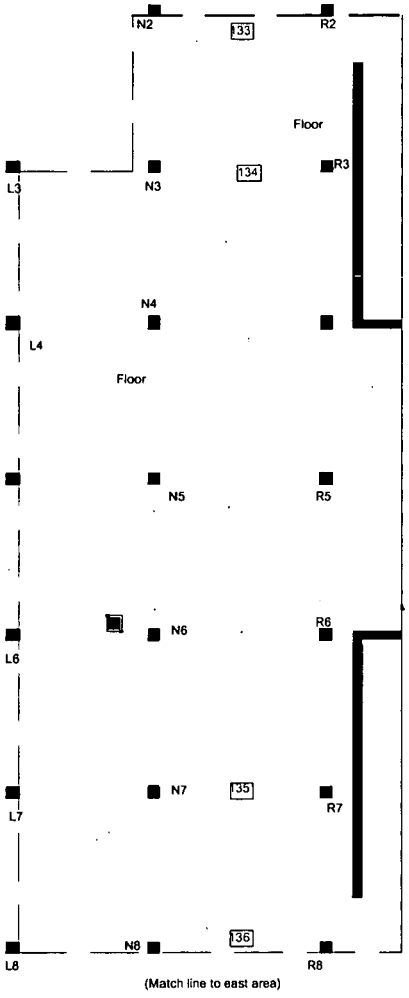
Chemical Data Summaries and Sample Maps

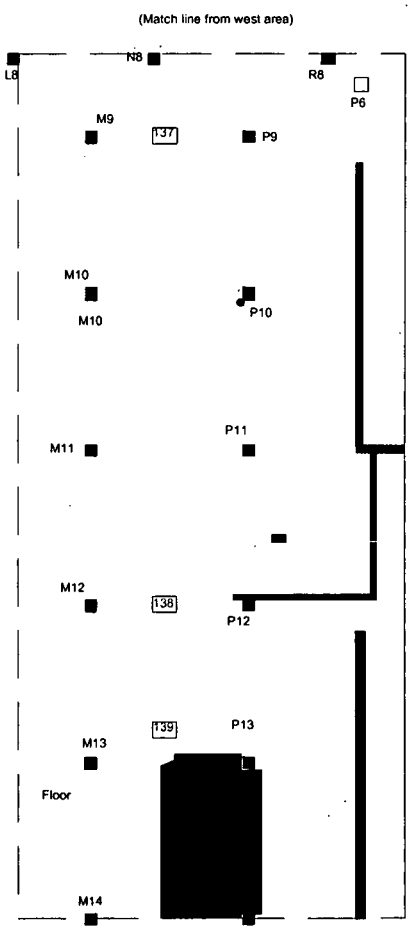
BERYLLIUM CHARACTERIZATION SURVEY FOR THE 771 CLUSTER

Survey Area: AH **Survey Unit: 771038 Be** **Classification: NA**
Building: 771
Survey Unit Description: Second floor north end (Rooms 232-238)

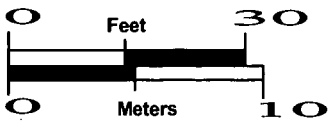
Total Floor Area: 10978 sq. ft. **Total Area: NA** **Grid Size: NA**

SURVEY UNIT 771038 Be - MAP 1 OF 1

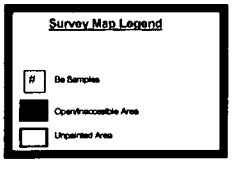




Sample location	Sample Number	Sample Result
133 thru 139	771-07-07-2004-76-133 thru 139	<0.1 ug/100 sq. cm
	771-07-09-2004-76-101B thru 102B	Blanks



N ⇨

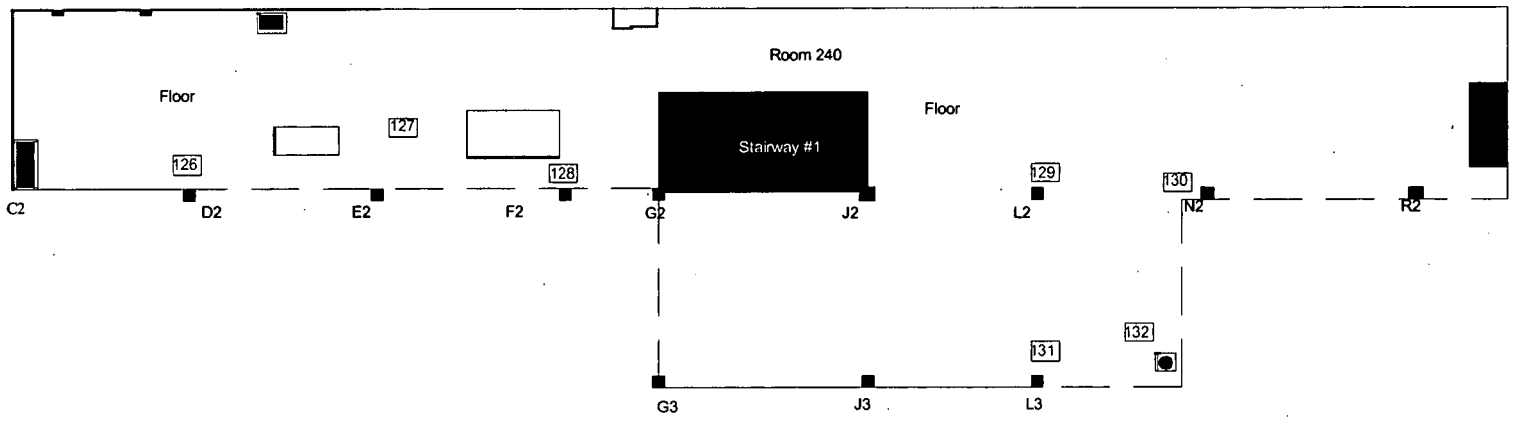


BERYLLIUM CHARACTERIZATION SURVEY FOR THE 771 CLUSTER

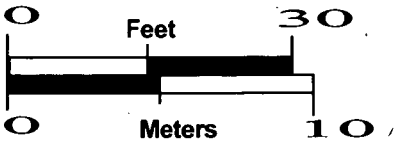
Survey Area: AH **Survey Unit: 771039 Be** **Classification: NA**
Building: 771
Survey Unit Description: Second floor west end (Rooms 2239, 240, 240G)

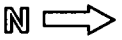
Total Floor Area: 3993 sq. ft. **Total Area: NA** **Grid Size: NA**

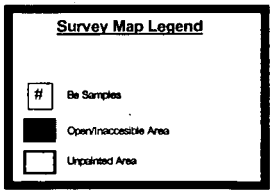
SURVEY UNIT 771039 Be - MAP 1 OF 1



Sample location	Sample Number	Sample Result
126 thru 132	771-07-07-2004-76-126 thru 132	<0.1 ug/100 sq. cm
	771-07-09-2004-76-101B thru 102B	Blanks





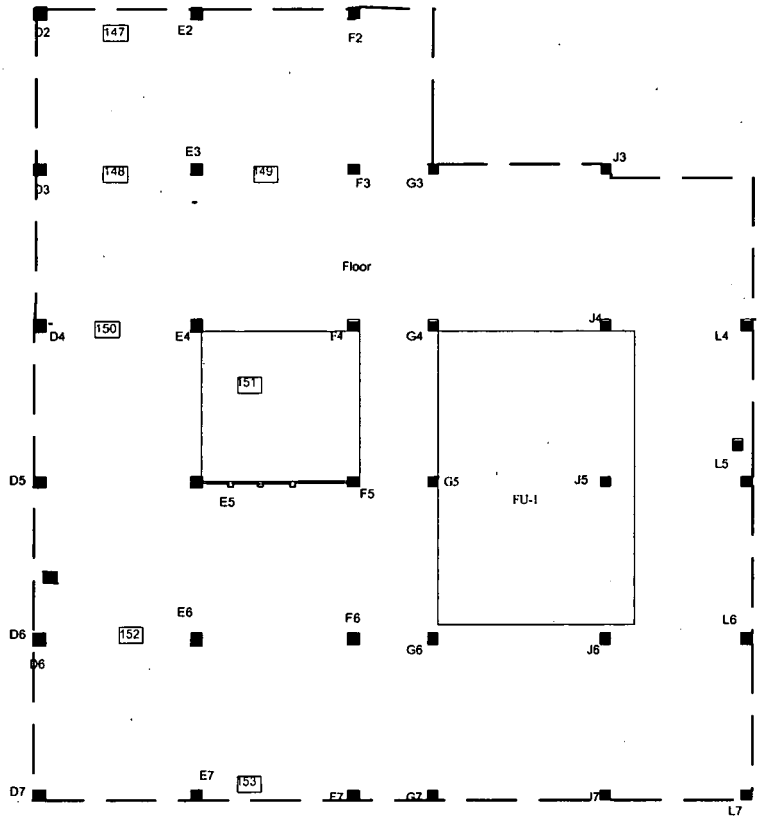


BERYLLIUM CHARACTERIZATION SURVEY FOR THE 771 CLUSTER

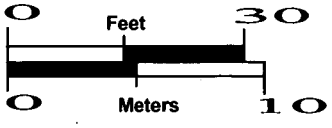
Survey Area: AH **Survey Unit: 771041 Be** **Classification: NA**
Building: 771
Survey Unit Description: Second floor (Room 249 west end)

Total Floor Area: 8415 sq. ft. **Total Area: NA** **Grid Size: NA**

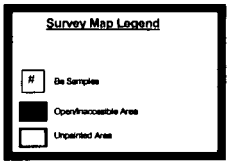
SURVEY UNIT 771041 Be - MAP 1 OF 1



Sample location	Sample Number	Sample Result
147 thru 153	771-07-07-2004-76-147 thru 153	<0.1 ug/100 sq. cm
	771-07-09-2004-76-101B thru 102B	Blanks



N



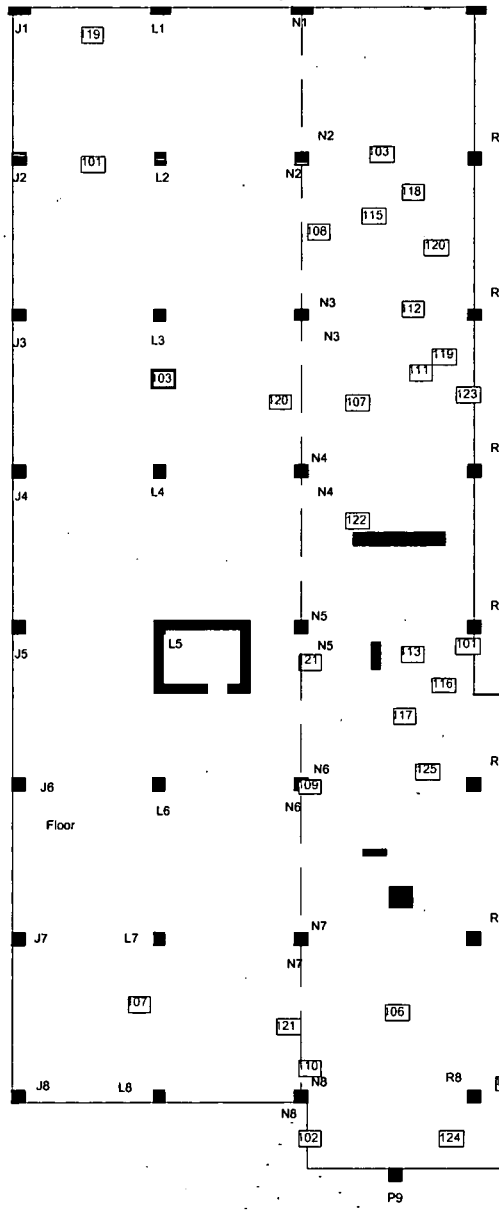
BERYLLIUM CHARACTERIZATION SURVEY FOR THE 771 CLUSTER

Survey Area: AE **Survey Unit: 771072 Be** **Classification: NA**
Building: 771
Survey Unit Description: First floor (North end west side)

Total Floor Area: 9250 sq. ft. **Total Area: NA** **Grid Size: NA**

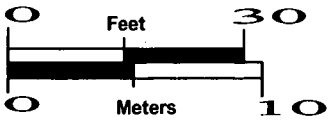
SURVEY UNIT 771072 Be - MAP 1 OF 1

Sample location	Sample Number	Sample Result
101, 103, 107	771-07-20-2004-76-101,103,107	<0.1 ug/100 sq. cm
	771-07-20-2004-76-143B thru 144B	Blanks

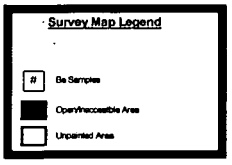


Sample location	Sample Number	Sample Result
119 thru 121	771-07-20-2004-76-119 thru 121	<0.1 ug/100 sq. cm
	771-07-20-2004-76-143B thru 144B	Blanks

Sample location	Sample Number	Sample Result
101 thru 125	771-12-01-2003-76-101 thru 125	<0.1 ug/100 sq. cm
	771-12-01-2003-76-126B thru 127B	Blanks



N



771	283	7/7/04	BE SWIPE BETWEEN COLUMNS A11 & B11	SURFACE	771-07072004-76-121	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE NORTH OF COLUMN B2	SURFACE	771-07072004-76-122	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE WEST OF COLUMN A2	SURFACE	771-07072004-76-123	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE SOUTH OF COLUMN B4	SURFACE	771-07072004-76-124	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE NORTH OF COLUMN A8	SURFACE	771-07072004-76-125	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE WEST OF COLUMN D2	SURFACE	771-07072004-76-126	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE WEST OF COLUMN E2	SURFACE	771-07072004-76-127	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE WEST OF COLUMN F2	SURFACE	771-07072004-76-128	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE WEST OF COLUMN L2	SURFACE	771-07072004-76-129	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE ON CORNER OF COLUMN N2	SURFACE	771-07072004-76-130	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2

771	283	7/7/04	BE SWIPE - COLUMN L3	SURFACE	771-07072004-76-131	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE EAST OF N2 - NORTH OF L3	SURFACE	771-07072004-76-132	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMN N2 & R2	SURFACE	771-07072004-76-133	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMN N3 & R3	SURFACE	771-07072004-76-134	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMN N7 & R7	SURFACE	771-07072004-76-135	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMN N8 & R8	SURFACE	771-07072004-76-136	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMN M9 & P9	SURFACE	771-07072004-76-137	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMN M12 & P12	SURFACE	771-07072004-76-138	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMN M13 & P13	SURFACE	771-07072004-76-139	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMNS D2 & E2	SURFACE	771-07072004-76-147	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2

771	283	7/7/04	BE SWIPE BETWEEN COLUMNS D3 & E3	SURFACE	771-07072004-76-148	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMN E3 & F3	SURFACE	771-07072004-76-149	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE NORTH OF COLUMN D4	SURFACE	771-07072004-76-150	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE CENTER OF E4, F4, E5, F5	SURFACE	771-07072004-76-151	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMNS D6 & E6	SURFACE	771-07072004-76-152	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE BETWEEN COLUMNS E7 & F7	SURFACE	771-07072004-76-153	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE SOUTH OF B13	SURFACE	771-07072004-76-165	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2
771	283	7/7/04	BE SWIPE SOUTH OF B15	SURFACE	771-07072004-76-166	BERYLLIUM AND BE COMPOUNDS (AS BE)	< 0.1000 _ UG/100CM2

ATTACHMENT H

Data Quality Assessment

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed; the radiological survey assessment is provided in Table E-1, and beryllium in E-2. A data completeness summary for all results is given in Table E-3.

All relevant Quality records supporting this report are maintained in the B771 Characterization Project Files. This report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic $DCGL_w$ (100 dpm/100cm^2).

SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied site PDSP guidance. However, it should be noted that because portions of the facility exceed the DCGLs and shall be dispositioned as radiological waste, the original survey design was modified. When a randomly selected TSA/RSA location landed on a previously identified "hot-spot", the location was moved as close as possible to the original location within the square meter. When this was not possible, a new random location was selected. All facility contamination levels were below applicable unrestricted release levels, except as noted in Table E-3. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with

applicable procedures, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits.

Level 1 Isolation Controls have been implemented to prevent the inadvertent introduction of further contamination into the facility. On this basis, the B771 AH (2nd Floor West Side) meets the RLCP and PDSP DQO criteria with the confidences stated herein.

Table E-1 V&V of Radiological Surveys – B771 AH (2nd Floor West Side)

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
Parameters		Measure	Frequency	COMMENTS
ACCURACY	initial calibrations	80%<x<120 %	≥1	Calibration using Alpha Group procedure and approved technicians.
	daily source checks	80%<x<120 %	≥1/day	Performed daily/within range.
	local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected Ranges <10 cpm
PRECISION	field duplicate measurements for TSA	≥5% of real survey points	≥100% packages	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Unit 771043, 771077, 771038, 771039, 771041	statistical	NA	Random w/ statistical confidence. Some measurement locations were moved within the contiguous square meter when they landed on a previously identified "hot-spot". When this was not possible, a new random location was generated to replace the original location.
	Survey Maps	NA	NA	Random measurement locations controlled/mapped to ±1m. When this was not possible, a new random location was generated to replace the original location.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.

COMPARABILITY	units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	MDAs ≤ ½ $DCGL_w$ per MARSSIM guidelines.

Table E-2 V&V of Beryllium Results – B771 AH (2nd Floor West Side)

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville Corp. Denver, Co.	
QUALITY REQUIREMENTS		RIN ---->	RIN 771-07-07-2004-76-121 to -139, -147 to –153, and –165 to -166	
		Measure	**Frequency**	**COMMENTS**
ACCURACY	**Calibrations** Initial	linear calibration	≥1	No qualifications significant enough to change project decisions, i.e., classification of Type 3 facilities confirmed for radiological contamination. No Beryllium results above action level (0.2ug/100cm^2) or investigative level (0.1ug/100cm^2).
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks - lab & field	<MDL	≥1	
	interference check std (ICP)	NA	NA	
PRECISION	Laboratory Control Sample Duplicate	80%<%R<120% (RPD<20%)	≥1	
	field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs. Actual samples usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	detection limits	MDL of 0.10ug/100cm^2	all measures	

Table E-3 Data Completeness Summary – B771 AH (2nd Floor West Side)

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	B771 AH 771041 (RM 249 Central west side)	7 biased (interior)	7 biased (interior)	No beryllium contamination found at any location, all results below the regulatory limit	OSHA ID-125G RIN 771-07-07-2004-76-147 thru 153 No results above action level (0.2ug/100cm^2) or investigative level (0.1ug/100cm^2).
Beryllium	B771 AH 771038 (RM 232-238 North west side)	7 biased (interior)	7 biased (interior)	No beryllium contamination found at any location, all results below the regulatory limit	OSHA ID-125G RIN 771-07-07-2004-76-133 thru 139 No results above action level (0.2ug/100cm^2) or investigative level (0.1ug/100cm^2).
Beryllium	B771 AH 771077 (Room 283 Below 6ft)	7 biased (interior)	7 biased (interior)	No beryllium contamination found at any location, all results below the regulatory limit	OSHA ID-125G RIN 771-07-07-2004-76-121 thru 125, and 771-07-07-2004-76-165 thru 166 No results above action level (0.2ug/100cm^2) or investigative level (0.1ug/100cm^2).

Table E-3 Data Completeness Summary – B771 AH (2nd Floor West Side)

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	B771 AH 771039 (RM 2239, 240, 240G)	7 biased (interior)	7 biased (interior)	No beryllium contamination found at any location, all results below the regulatory limit	OSHA ID-125G RIN 771-07-07-2004-76-126 thru 132 No results above action level (0.2ug/100cm^2) or investigative level (0.1ug/100cm^2).
Radiological	Survey Area: B771 AH 771077 (Room 283 Below 6ft)	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 100 % scanned	15 α TSA (15 – Random/Systematic) and 15 α Smears (15 - Random/Systematic) 2 QC TSA 100 % scanned	No elevated contamination at any location; all values below PDS unrestricted release levels No result above action level All results less than DCGLs, except as noted in red on survey unit scan map (Att. F)	Transuranic DCGLs Random survey locations that landed on previously identified "hot-spots" (i.e., areas shaded in red on survey unit overview maps) were relocated as close to the original location as possible within the continguous square-meter. When this was not possible, a new random location was selected from a random-number generator. No results above DCGLw identified at random locations.

Table E-3 Data Completeness Summary – B771 AH (2nd Floor West Side)

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area: AH Survey Unit: 771043 (283 Above 2m West side)	19 α TSA (19 – Random/Systematic) and 19 α Smears (19 - Random/Systematic) 2 QC TSA 17% scanned	19 α TSA (19 – Random/Systematic) and 19 α Smears (19 - Random/Systematic) 2 QC TSA 17% scanned	No elevated contamination at any location; all values below PDS unrestricted release levels No result above action level No result above action level	Transuranic DCGLs
Radiological	Survey Area: AH Survey Unit: 771039 (RM 2239, 240, 240G)	60 α TSA (60 – Random/Systematic) and 60 α Smears (60 - Random/Systematic) 3 QC TSA 100% scanned	60 α TSA (60 – Random/Systematic) and 60 α Smears (60 - Random/Systematic) 3 QC TSA 100% scanned	No elevated contamination at any location; all values below PDS unrestricted release levels No result above action level All results less than DCGLs, except as noted in red on survey unit scan map (Att. C)	Transuranic DCGLs Random survey locations that landed on previously identified "hot-spots" (i.e., areas shaded in red on survey unit overview maps) were relocated as close to the original location as possible within the continguous square-meter. When this was not possible, a new random location was selected from a random-number generator. No results above DCGLw identified at random locations.

Table E-3 Data Completeness Summary – B771 AH (2nd Floor West Side)

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area: AH Survey Unit: 771038 (North West End, RM 232-238)	75 α TSA (75 – Random/Systematic) and 75 α Smears (75 - Random/Systematic) 4 QC TSA 100% scanned	75 α TSA (75 – Random/Systematic) and 75 α Smears (75 - Random/Systematic) 4 QC TSA 100% scanned	No elevated contamination at any location; all values below PDS unrestricted release levels No result above action level All results less than DCGLs, except as noted in red on survey unit scan map (Att. B)	Transuranic DCGLs Random survey locations that landed on previously identified "hot-spots" (i.e., areas shaded in red on survey unit overview maps) were relocated as close to the original location as possible within the continguous square-meter. When this was not possible, a new random location was selected from a random-number generator. No results above DCGLw identified at random locations.
Radiological	Survey Area: AH Survey Unit: 771041 (RM 249 Central west side)	101 α TSA (101 – Random/Systematic) and 101 α Smears (101 - Random/Systematic) 6 QC TSA 100% scanned	101 α TSA (101 – Random/Systematic) and 101 α Smears (101 - Random/Systematic) 6 QC TSA 100% scanned	No elevated contamination at any location; all values below PDS unrestricted release levels No result above action level All results less than DCGLs, except as noted in red on survey unit scan map (Att. D)	Transuranic DCGLs Random survey locations that landed on previously identified "hot-spots" (i.e., areas shaded in red on survey unit overview maps) were relocated as close to the original location as possible within the continguous square-meter. When this was not possible, a new random location was selected from a random-number generator. No results above DCGLw identified at random locations.

ATTACHMENT I

Historical Review

Area AH (B771 Utilities Area)
Historical Review
August 10, 2004

Facility ID: Building 771 2nd Floor Area (Survey Area AH West)

Anticipated Facility Type (1, 2, or 3):

Survey area AH is part of a Type 3 Facility. Although the area was primarily a building utilities area, this area contained contaminated Zone 1 and Zone 2 HVAC systems, as well as the Health Physics vacuum system pumps and piping.

Physical Description:

Building 771 is located in the north-central section of RFETS Industrial Area. The building is predominantly constructed of reinforced concrete, with some non-production portions of the building constructed of concrete block and fabricated metal. The original building was a two-story structure built into the side of a hill with most of the three sides covered by earth. The fourth side, facing the north, provides the main entrance to the building. The original building measures 263 feet (north to south) by 282 feet (east to west) on the ground floor, and 202 feet by 282 feet on the second floor. The building is 31 feet tall, and there are no outside windows in the main building. The Building 771 2nd Floor Area (AH) was part of the original building.

Historical Operations:

The 2nd floor consisted of the following areas:

The Main Plenum Area: This area includes rooms 280, 280A, 280B, 280C, 281, 281A, 281B, 282, 282A, 282B, 282C and 282D; filter elements; cinderblock walls; and plenum doors. The primary filter bank contained 525 filters. The secondary filter bank contained 391 filters. All filters, and the first stage of the plenum, have been removed.

Room 283 HVAC Exhaust and Utilities Area: This area includes Room 283, 283A (SOE Control Room), 283B, 283C, 283D, 283E, 283F, 283G, 283H, 283I and 283J; the six main exhaust fans and motors; uninterruptible power supply system; main electrical switch gear; and Control Room Panels.

Room 235 HVAC Supply and Utilities Area: This area includes Rooms 236, 237, 238, 238A, 239, 240, 240A, 240B, 240C, 240D, 240E and 240G; supply fans and motors; plenums; and walls. This area contains the B771 air intake system, consisting of filters, heaters, blowers and dampeners.

Room 249 HVAC Exhaust and Utilities Area: This area includes Room 249; Zone 1 Filter Plenums, fans, motors, and ductwork; and chemical make-up tanks, piping, and valves. The Zone 1 Filter Plenums were highly contaminated and had the potential to contain anything that was exhausted from the Building 771 gloveboxes and hoods. Multiple kilograms of SNM hold-up were present in the Zone 1 Filter Plenums. This area has been decontaminated by hydrolasing,

Current Operational Status

The Building 771 2nd Floor (Area AH) is no longer operational. All major equipment/piping and non-load-bearing walls have been removed.

94

Area AH (B771 Utilities Area)
Historical Review
August 10, 2004

Contaminants of Concern

Asbestos

The Building 771 2nd Floor Area (AH) was part of the original construction, therefore the presence of ACM was suspected. A Certified Building Inspector performed a complete inspection of the area and sampled the suspect materials. Asbestos-Containing Material (ACM) was identified in the following materials:

- Main filter plenum (removed)
- silver-painted flashing (to be removed per the demolition plan)
- drywall joint compound (removed)
- mudded fittings on domestic water and steam condensate piping (removed)

Beryllium (Be)

Based on historical and existing classifications, the general area of the B771 2nd Floor was not a RFETS Beryllium (Be) Area. The interiors of the Zone 1exhaust plenums were controlled as Be areas during the D&D process. The effected sections of these plenums have since been removed.

Lead

The remaining paint in the AH area will not be removed from the substrate.

Although the AH Area paint was not specifically sampled and evaluated for lead, the samples collected from other areas of Building 771 are considered representative of the expected lead levels in Area AH. Analysis of 61 paint samples from the process areas of the 771/774 complex indicates that lead levels are below regulatory limits in paint.

RCRA/CERCLA Constituents

Area AH West was never used to manage hazardous waste.

PCBs

Free-flowing or exposed PCBs have never been used or transferred in Area AH. PCB ballasts in fluorescent light fixtures were present throughout the area, and have been removed and disposed of. PCBs may be present in some applied paints. Because additional paint sampling was not performed in Area AH, and because painted surfaces remain in the area (cinderblock and concrete walls), any painted debris generated during demolition that is not recycled on-site will be disposed of a PCB bulk product waste.

Radiological Contaminants

The contaminants of concern for the 771 project, including all areas of Buildings 771 and 774, are transuranic alpha-emitting radioisotopes (including Pu-238, Pu-239/240, Pu-242, and Am-241). Based on findings documented in Radiological Engineering TBD-00161, Rev. 0, alpha-only surveys assure that the unrestricted-release limits for any other isotopes that may exist in Building 771/774 will not be exceeded.

Since Area AH of B771 was primarily a building utilities area, there were no Plutonium process areas in this area. However, Room 249 did contain the highly contaminated Zone 1 and Zone 2 exhaust plenums along with the associated ductwork. During the D&D process, the area was controlled as an Airborne Radioactivity and Contaminated Area.

Environmental Restoration Concerns

None

95

Additional Information
None

References
(1) *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0.
(2) *Building 771/774 Cluster Closure Project Reconnaissance Level Characterization Report*, dated August 8, 1998, Revision 2.

Further Actions
Complete the PDS process.

96

ATTACHMENT J

Supporting Documentation

86/86

Room 283 Biased Paint Sample Data

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID (RIN #01N0045)	NUCLIDE	pCi/g	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in^2)	INDIVIDUAL NUCLIDE ($dpm/100cm^2$)	ESTIMATED MDA ($dpm/100cm^2$)	TRANSURANIC TOTAL ($dpm/100cm^2$) $DCGL_W$=100
Room 282C Exterior	1	004.001	Pu-239/240	0.030	0.080	2.13	52.5	0.0	0.1	
			Am-241	0.061	0.083			0.1	0.1	**0.1**
Room 283, ceiling	2	011.001	Pu-239/240	0.153	0.194	6.16	26.25	1.2	1.6	
			Am-241	0.066	0.090			0.5	0.7	**1.8**
Room 283, ceiling	3	010.001	Pu-239/240	0.061	0.082	9.23	26.25	0.7	1.0	
			Am-241	0.000	0.094			0.0	1.1	**0.7**
Room 283, south wall	4	006.001	Pu-239/240	1.060	0.096	20.40	26.25	28.3	2.6	
			Am-241	0.300	0.090			8.0	2.4	**36.4**
Room 283, north wall	5	001.001	Pu-239/240	1.180	0.127	13.10	26.25	20.3	2.2	
			Am-241	0.203	0.079			3.5	1.4	**23.7**
Room 283, north wall	6	008.001	Pu-239/240	0.106	0.072	17.29	26.25	2.4	1.6	
			Am-241	0.091	0.082			2.1	1.9	**4.5**
Rooms 283C-G, Exterior	7	002.001	Pu-239/240	0.057	0.146	26.55	26.25	2.0	5.1	
			Am-241	0.000	0.082			0.0	2.9	**2.0**
Room 283, ceiling	8	007.001	Pu-238	0.096	0.087	11.67	26.25	1.5	1.3	
			Pu-239/240	0.351	0.087			5.4	1.3	
			Am-241	0.087	0.078			1.3	1.2	**8.2**
Room 283, north wall	9	013.001	Pu-239/240	4.110	0.062	13.94	26.25	75.1	1.1	
			Am-241	0.748	0.263			13.7	4.8	**88.8**
Room 283B, north wall	10	014.000	Pu-239/240	0.509	0.204	2.93	52.5	1.0	0.4	
			Am-241	0.108	0.199			0.2	0.4	**1.2**
Roof Exit, north wall	11	015.001	Pu-239/240	0.030	0.143	20.02	26.25	0.8	3.8	
			Am-241	0.085	0.077			2.2	2.0	**3.0**

NOTE: Pu-238 reported if greater than MDC.

MIN	**0.1**
MAX	**88.8**
MEAN	**15.5**
SD	**26.9**
$DCGL_W$ =	**100**